DECEMBER, MDCCCLXII.

THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, MOLLUSKS,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

Nos. CCXLIX. & CCL.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

Price TWO SHILLINGS.

TO CORRESPONDENTS.

Double Number. — The present is a double number, that is, Nos. 249 and 250 are published simultaneously and in one wrapper. The price is Two Shillings to all who have not prepaid.

Papers remaining on hand. — Those received up to the 24th of November bear the signatures which follow :—

Birds.—William Bennett, Edward Blyth, John Whatt, Henry Nicholls, John Dutton, William Morris, Henry Rogers, H. W. Newman, John Gatcombe, W. Christy Horsfall, H. Blake-Knox, J. H. Dunn, H. Stevenson, S. P. Saville.

Reptiles.—E. H. Rodd.

Mollusks.—Arthur Adams, John P. Daniel.

Insects.—Guenée, H. Doubleday, C. G. Barrett, W. D. Crotch, W. C. Hewitson, H. Harpur Crewe, H. T. Stainton, E. Horton, C. Miller.

Radiata.—W. R. Hughes.

Proceedings of the Entomological Society.—J. W. Dunning.

Prepayments for 1863.—I beg to remind my readers that the Subscription for 1862 has expired, and that the prepayment for 1863 is now due, and must be made before the end of the present year. No plan ever gave so great satisfaction to all parties as this of prepayment; all complaints of irregularity in delivery have ceased, and every Subscriber has his copy on or before the 1st of each month. Those paying for the twelve months in advance are entitled to Double Numbers, however frequently they may occur.

I avail myself of this opportunity to thank most heartily those gentlemen whose constant co-operation has contributed so largely to bring the 'Zoologist' to its present state of excellence, as well as favour with the public.

I must express my regret that the excessive sale of certain numbers—namely, those for March, April and July, 1861, and for January, 1862—has exhausted the stock, and they are out of print, causing great inconvenience to naturalists who have delayed the purchase or not taken the work regularly. I would at once reprint any number that became out of print during the month of publication, but I cannot do so when all the regular Subscribers have been supplied, and the remaining stock has been exhausted by an irregular and unexpected demand, on which it is impossible to calculate. I shall be very glad to give One Shilling each for either of the numbers mentioned above, or Six Shillings for the four, if in good condition.

Mr. Stainton's 'Entomologist's Annual' will be published as usual.

I am now able to announce the price of Mr. Greene's 'Insect Hunters' Companion:' a cheap work like this—giving the young Entomologist every possible instruction for collecting Lepidoptera, whether in the state of egg, caterpillar, chrysalis or perfect insect, with full directions for killing, setting and preserving—has been, for fifty years, the one great desideratum in Entomology. My own 'Familiar Introduction' is too expensive for the schoolboy, and, moreover, contains a vast amount of information which he will scarcely desire to acquire until he has gone through the elementary course of finding, catching, killing and setting, taught by Mr. Greene. It will probably be published on New Year's Day, and the price will be One Shilling and Sixpence.

'Zoologist,' 1863, 'Annual,' 1863, and 'Insect Hunters' Companion,' together	16*s*.

Please make Post-office Orders payable *to* Edward Newman, 9, Devonshire Street, Bishopsgate, N.E., and *at* the Bishopsgate Street Money-order Office. In paying by Stamps, please *not* to wet them, with an idea of greater security; this common practice is always most annoying to the receiver, and sometimes causes him the loss of one or more stamps.

NOTICES OF NEW BOOKS.

'*On Unity of System.*' London: E. Newman, 9, Devonshire Street, Bishopsgate. 1862. 24 pp. letterpress. Price Sevenpence, post free.

IN introducing this little *brochure* to the notice of my readers I wish to observe that, as the printer, I possess information respecting it which the author has omitted to impart to the public, namely, that although apparently complete in itself, this is but the first of a series of sheets to be issued at intervals; but just as (to use the author's own expression) "all the parts of creation represent each other, and are severally figurative of the whole plan," so does the sheet now before me represent truthfully the author's views of the "unity of system," however those views may be elaborated, extended and reproduced in the sheets which are to follow.

The way in which each paragraph is headed is somewhat novel in literature, and possesses the great advantage of giving concisely the author's interpretation of his own thoughts. I could wish this plan were more generally followed: how often do we not meet with long and involved paragraphs in mystical or speculative works, which, being unaccompanied by this key, leave no impression whatever on the mind!

"*The necessity and the advantages of system.*—The injunction in the Bible, to search and to investigate the works of creation, is accompanied with the assurance that the laws of Nature, the history of mankind, and what is contained in the Bible, are all parts of one system, and that the Sciences, or the various branches of knowledge, converge more together in proportion to their progress. Little more than one hundred years have elapsed since system, to any extent, was applied to Natural History; but the progress in that study, by means of the use of system was afterwards continually more rapid."—(P. 5).

The author's views of creation appear to approach those of Mr. Darwin, but whereas Mr. Darwin seems to imply the existence of a continual progress, and that all forms, even the most elaborately complex, may have been evolved from a single monad, the author of the 'Unity of System,' while he admits and defines the constant change, the constant divergence from a given type, yet assures us that

"*Divergence precludes progress.*—All creatures have one origin; for it is well known that there is no apparent difference between the kinds of living creatures at the beginning of their existence, and that the great divisions of beings, from the lowest forms to the human race, are successively manifest during the growth, beginning with the distinction between the animal and vegetable kingdoms, and continuing through the lesser divisions of the animal kingdom to the distinction of species. It is obvious that if matter were merely to be raised from its lowest state to its highest degree, as it is in man, he would be the only kind of creature on earth; but the law of development acts by means of divergences. These divergences retard or regulate progress, and the way by which the law of divergence is controlled may be termed the law of degradation. In other words, all the developments are divergences; and no kind of creature, from the lowest to the highest, makes any progress towards a higher state in its development, or advances at all to the creatures which are above it in degree, but, on the contrary, diverges from them. And man also makes no real progress towards a higher state, by the development of his faculties, or by the progress of civilization, or by the arts of life."—(P. 12).

The next paragraph comes more within the range of Natural History observation, but is based, as it appears to me, on a fallacy,—that we are acquainted with the first origin of "living creatures." This is not the case: life may be compared to a thread, which appears to be severed at a point called death, but of which the other extremity is unseen and unknown; our author assumes a knowledge of that other extremity, and calls it the "first origin."

"*The unity at the commencement of all kinds of life, or of all living creatures.*—All kinds of living creatures are alike in their first origin, and, in the progress of growth, the characters which are common to the whole animal kingdom first appear, and then the distinctive characters of the class, of the order, of the family, of the genus, and of the species, are successively evolved, until all the characters have their most full development, or until the creature has attained its most perfect state."—(P. 12).

In Wagner's 'Physiology,' which contains an admirable summary of observations, without much of that speculation which often obscures our scientific researches, we learn that the spermatozoon is a reproductive animal, and in all probability continues to transmit its form through countless generations, until one individual out of myriads achieves a higher destiny and higher development. Hence the inevitable conclusion that that spermatozoon is not the "first origin" of the "living creature" called man, but is only a point on that thread of life of which one extremity has always been hidden from man.

"*The systematic order in the epoch of each class of animals.*—It is well known that each class of animals had its peculiar epoch, in which it was supreme over other classes, and in which its forms or kinds had the highest development of the organic structure of its own class. In the following periods, up to the present one, the class above mentioned reappeared successively in other species, which were smaller in size or less highly endowed than those of its especial or most characteristic epoch."—(P. 16).

In connexion with this subject are several facts which scarcely accord with the theory here explained, or at anyrate stand as stumbling-blocks in the way of our accepting it in all its entirety, for instance Dr. Lund, in his 'Brazilian Researches among Fossil Bones,' found those of a diminutive sloth closely resembling, if not identical with, the species still inhabiting the same regions; hence we cannot consider our diminutive sloths as Megatheriums and Mylodons reappearing of a smaller size, but more probably the lineal descendants of those small sloths which Lund assumes were synchronous with the gigantic Megatherium. In continuation and amplification of our author's view, he thus continues:—

"*The connexion between the present epoch of animals and the former epochs.*—Geology has not only very much increased the knowledge of nature, by the discovery of many thousands of kinds of creatures that have passed away, but has also enlarged the knowledge of living animals, by showing that the latter, in their progressive growth, have suppressed resemblances of the structures that were perfectly developed in extinct creatures. Thus the knowledge of beings now existing is incomplete without the knowledge of the beings of former epochs; and the transitory state of later creatures may be most completely studied in the permanent state of earlier creatures.

"*The change in structure.*—The earlier change is most complete and most outwardly manifest in a large part of the animal kingdom, such as insects generally and some reptiles, in which the two successive forms of the same creature seem to be completely different from each other, and in which the transitory form appears for a long while to be the final and perfect form. This change becomes successively more and more inward throughout the ascending scale of creation."—(Pp. 16—17).

The next subject may be said to have been well "ventilated;" it is now as trite and threadbare as it was once novel and glittering.

"*The earlier form of the higher creature corresponds with the final form of the lower creature.*—This discovery was made by John

Hunter, and has been thus expressed :—'Each stage in the development of the highest corresponds with the permanent form of some one of the inferior orders.' Or in other words :—'In the earliest period of existence all animals display one uniform condition, but after the first appearance of special development uniformity is only met with amongst the numbers of the same primary division, and with each succeeding step it is more and more restricted. The mammal exhibits no likeness to the Invertebrata, except in the ovarian stage of the latter.' Thus, in the animal kingdom, the creature passes through a series of changes which are permanent in all creatures below it in rank, and the various structures of the latter are all combined in the organization of the former. There are no direct degrees of perfection, and the elaboration of every creature does not raise it or bring it nearer to a higher form, but the development is lateral or deviating, and therefore recedes in some degree from the next superior state."—(P. 19).

This cannot well be otherwise: we are agreed on two facts; first, that some animals are more highly developed than others, as for instance a bird than an oyster; secondly, that the same individual advances in development as it advances in age, thus the egg of a sparrow is gradually developed into a blind naked bird, and that blind naked bird acquires sight and feathers and powers of locomotion. The acorn is less developed than the oak, and supposing there to be a mature plant resembling an acorn it follows that the plant, *viz.*, the oak, has passed through the permanent form of that lower plant which resembles an acorn. These are simply facts, and I do not see how they could well be otherwise. Either every animal must come into the world perfect and mature, like Minerva from the brain of Jupiter, or must rise to maturity by progressive steps. The latter is the course appointed by an allwise Creator. In these progressive steps it will of necessity more or less resemble some inferior, or less developed animal. To proceed.

"*The variety effected by transfer.*—The one spirit effects all the variety of creation, by transferring a part or a degree to another part or degree. The power of life is to some extent withdrawn from one part of the structure, and is directed to another part, or is removed from one organ or limb or faculty, which then becomes slight and ineffective, while another organ is developed in proportion. The forms of this transfer are collectively a set of examples of the universal system of progress, by the process from the outward to the inward, or from the figure to the substance.

"*The system of the growth and the changes in form of each species represents the system or the classification of all species.*—The system or the classification of animals is wholly in unison with their chronological distribution, or with their creation in successive geological epochs, and accordingly affords innumerable illustrations of the law of degradation or of lateral development, which is manifest in all the successive subdivisions of the animal kingdom. This law is also apparent in every species, by the comparison of the early state with the final state of the creature, and of one part of the structure with another part."—(P. 20).

In the next and only other paragraph I shall cite I must invite attention to the assertion "the epochs are longer and longer in proportion as they are more remote, &c." Is there not a more obvious truth susceptible of this explanation? "the epochs are more and more obscure, their diagnostics are more and more concealed from us in proportion as they are more remote."

"*The retrogressive lengthening of the epochs.*—The few thousand years which have elapsed since the beginning of the distinctly recorded epoch of man are a very brief period when compared to the shortest of the preceding epochs; and the epochs are longer and longer in proportion as they are more remote from the present one, and when they are retraced one by one they appear to be successively more immeasurable. The epochs of mammals and of reptiles, though they are long when compared with that of mankind, are very short when compared with the epochs of fishes and of mollusks; and the whole animal period, although it extends over unnumbered millions of millions of years, is very brief when it is compared to the preceding time, which was unattended by forms of life. In the creation it apparently lengthens backwards to countless repetitions of the above-mentioned numbers. This fact helps to demonstrate the everlasting continuance of progress."—(P. 21).

In conclusion I need only add that this pamphlet exhibits great learning and the most profound thought: it ought to be read by every naturalist; but I cannot venture to say that the views it discloses are in accordance with my own, or that they are likely to meet with any very extensive reception, even in the present day, when Mr. Darwin's labours have led discursive minds to transform Natural History into a speculative study rather than an aggregation of facts.

EDWARD NEWMAN.

On the Ornithology of Northern Japan.

By Captain BLAKISTON, R.A.*

A COUPLE of sleepless nights on shore at Shanghai, from the effect of mosquitos and the intense heat of a Chinese July, after a five months' cruise on the Yang-tsze Kiang, were sufficient to cause me to decide on migrating to cooler regions. There were frequent chances for the southern ports of Japan; but, as luck would have it, an opportunity offered of a passage to the little-frequented port of Hakodadi, in the northern island Yesso; and through the kindness of Mr. Webb (the head of the firm of Dent & Co. at Shanghai), a gentleman well known to the ornithological world, I was allowed to take a passage in the good barque 'Eva,' commanded by Captain David Scott. The night of the 13th July, 1861, found us anchored in the outer roads off Woosung, at the mouth of the Shanghai river, and the day following we got clear of the muddy current of the Great River into blue water. Favoured by the south-west monsoon and fair weather, we made good progress for several days, and, passing through the Strait of the Corea, entered the Sea of Japan on the 17th. Beyond this the monsoon was feeble; but the Kuro-Siwo, a branch of the North-Pacific Gulf-stream, which sets through these straits and up the sea, helped us along in the right direction.

Sea voyages in general have but little interest to the ornithologist, and ours on this occasion was no exception to the rule. A few sea birds only were seen, but not identified; and a solitary dove flew on board, and remained about the vessel for some time, one morning. At certain seasons, however, on this passage, land birds are met with in numbers; and Captain Scott, during a voyage from China in the month of October, caught some quails, several of which he kept alive for a few days. The line of migration is probably between the Corea and Nipon, the largest island of the Japanese group.

On the 25th of July we sighted a small rocky island called Ku-sima (*sima* meaning island, and *yama* mountain), near the western entrance of the Strait of Tsugar, which separates Yesso from Nipon; and working up against a stiff breeze, we got under the shelter of the high lands for the night following. Next morning we commenced beating through the Straits, and, the set of the current being strongly in our favour, we, by successive tacks, made good progress towards the Pacific. Passing Matsumai (formerly the chief town of

---

* Reprinted from the 'Ibis' for October, 1862, and communicated by the Author.

Yesso) early in the forenoon, we came up to Tsiuka Point at sunset, and by nine P.M. were at the entrance of the Bay of Hakodadi, where it fell calm. This prevented our reaching the anchorage off the town until four the next morning. The harbour was crowded with saucer-shaped native junks,—clumsy, unpainted, and primitive-looking craft, each with one heavy single mast, used for hoisting a large square sail of cotton canvas. Each of them was secured by at least three or four anchors, and had half-a-dozen more grapple-looking affairs ready at the bows for use in case of bad weather. Each and every one of these junks was so much like another that, were it not for a slight disparity in size, they might all have been supposed to have been cast in one mould. Numerous boats, with creaking oars, were being pulled about by naked Japanese, engaged in loading and unloading junks, while the small caique-shaped canoes of the fishermen dotted the harbour in all directions. The only foreign vessel ("foreign" being generally applied to European and American persons and things in the far East), besides our vessel the 'Eva,' was a Russian despatch war-steamer, which lay in deeper water than the junks. We took up our berth near her, and discovered that she was on the point of leaving for one of the new ports on the lately acquired coast of Manchouria. A great number of gulls were disporting themselves over the placid water of the harbour, and collecting the refuse thrown overboard from the junks, or pieces of bait discarded by the fishermen; and as a thick fog precluded a distinct view of the shore, I watched these birds with much interest. Although varying very considerably in plumage, they were all of one kind, Larus melanurus, the only species in fact, as far as my observations went, that spends the summer at Hakodadi. This is, moreover, the only gull given in the 'Fauna Japonica' as inhabiting the Japanese islands; but Commodore Perry's United States Expedition, which visited the country in 1854 (the Ornithological Report on which, by Mr. Cassin, will be found in vol. ii. of the Government publication), has added L. icthyaëtus, *Pallas*, besides a single immature specimen of what was considered to be L. brunneicephalus, collected in the Bay of Yedo, on the east coast. The first was said to be abundant in March. In October I observed, at Hakodadi, two or three of a large species of gull, all white, except the back and coverts of the wings, which were of a light slate-colour. On one or two occasions I also saw a tern, certainly not Sterna fuliginosa, figured in the 'Fauna Japonica,' but a small slate-blue and white species.

I think I have here enumerated all the Laridæ known as belonging to Japan. Their paucity induces me to believe that there is here a fine field of discovery open to any persevering ornithologist who may feel inclined to make a sojourn among the islands of this interesting group. In fact, I consider the Ornithology of Japan to be very imperfectly worked up. Siebold's specimens are all from the south, and probably most from Kiusu (the island on which Nagasaki is situated), while the fact of his having obtained them all, or nearly all, from the natives accounts for the want of information concerning habits and habitats in the 'Fauna Japonica,' otherwise so fine a production. All that is known of the Ornithology of Northern Japan specially is from the Expedition of Commodore Perry, already mentioned (most of the birds in which collection were obtained at Hakodadi), and from the later collections made by Mr. Maximovitch and myself. Mr. Maximovitch is a naturalist, but better known perhaps as a botanist, in the employ of the Russian Government, who, having been in Siberia and on the Amoor, was at Hakodadi during my stay there. His residence was of much longer duration than my own, and, as will be observed, the existence of many species is given entirely on his authority. I have, however, taken care to note when the fact is doubtful, because his only means of naming specimens at the time was by referring to a copy of the 'Fauna Japonica,' in the possession of the Russian Consul. Besides, most of his birds were packed up for going to St. Petersburg when I made his acquaintance, and consequently I had not an opportunity of examimining them. He will publish the results of his labours on his return to Russia.

Hakodadi is situated at the southern extremity of Yesso, the northernmost island of the Japan group, on a small mountain peninsula jutting into the Strait of Tsugar, and is connected with the mainland by a narrow sandy isthmus, on the eastern shore of which break the rollers from the broad Pacific, while it forms a fine land-locked bay and shelters a convenient harbour on the other. The peninsula is a mountain rising 1100 feet above the sea, and is called Hakodadi Head. On three sides its slopes are precipitous, and an iron-bound coast gives it such natural strength that it might, with little labour, be converted into a Gibraltar; in fact, most visitors are struck with the natural similarity of the place, on a small scale, to the gate of the Mediterranean. On the northern side is the town, the present seat of the Government of the island of Yesso, and the residence of the Consuls of Russia, England and America, and of a few merchants of the two latter countries. It is small, but rapidly increasing in mercantile importance. The readers of this magazine will not care to know much concerning how and why this is so, nor would statistics of its trade in dried fish, shell-fish, sea-weed, oil and timber, or the natural resources of the adjoining country in the way of coal, lead, iron or sulphur, be of much interest to ornithologists; and therefore it will suffice to say that the town is a collection of low wooden houses, overtopped with the shining tiled roofs of a few temples, and broken in its monotony by some black, sombre-looking Government establishments. A few houses straggle up the mountain side, whose rugged steep near its summit forms an admirable contrast to a thick forest of cedars and pines clothing its northern face. The Russian Consulate is a large imposing building, situate at one corner of this wood, and painted white; and this mark of foreign intervention is being increased by the addition of a Russian Hospital, and the British Consulate which is being built alongside.

A stranger landing from China is at once struck with the comparative wideness of the principal streets; but he cannot but notice that the ingenious Japanese, instead of paving or macadamizing them with stones, leave them to the care of an ever-watchful Providence, and pile the stones on the house-tops to keep the shingles (wooden tiles) from being blown away by the blasts of the typhoons which occasionally sweep over. The lowness of the houses is to be accounted for otherwise, namely, by the occurrence of earthquakes. Probably before you have taken many steps on the dry land of Yesso, you will have been made aware of the principal occupation of the inhabitants, and of one of the sources of wealth of Hakodadi, by the all-pervading odour of drying fish and sea-weed; and if an ornithologist you may repent that you had not in your earlier life rather turned your attention to "sea-side studies," on finding yourself everywhere surrounded by clams, cockles, kelp and cuttle-fish. But never mind—cheer up! Look at the fine mountain country across the bay to the northward—the thickly wooded hill-sides where sport woodpeckers of many hues, jays, nutcrackers and wood grouse. Turn to the fine fern-covered plains, the haunts of quail, larks, and the more obscure but not the less interesting buntings and their congeners. See oases of clumps of trees clustered round the dwellings or gardens of the scattered villages, where you will find various kinds of warblers, thrushes of several species, and other winged songsters little behind the most melodious of your own country. Observe the black-winged kite as he sweeps along the sea-beach, and the buzzard and harrier as they course the margins of lakes or hover over the reed-filled swamps, where ducks and teal conceal themselves in quiet till the shades of evening remind them of their wonted habit to visit some distant feeding-ground. Then, again, glancing towards the rocky shore, cormorants in numbers may be seen perched on the ledges of the cliffs, which have become whitened from their constant occupation. Swallows are skimming over the ponds, or dipping in the brook-like streams which course the lower lands and abound in excellent trout and other fish. A shrike perched on a topmost branch awaits the coming of some choice kind of winged insect, which his eagle eye detects from afar.

[After noticing the occurrence of Falco peregrinus, Accipiter nisus and a supposed new buzzard, Captain Blakiston proceeds as follows].

Milvus melanotis. A single specimen of the black-winged kite was selected from among a number killed. It was a female, and measured 26½ inches in length, and the wing 19 inches. The others were young males, and measured 25 inches, and from 18 to 19 inches in the wings. They were nearly all identical, but darker than the female, particularly on the under parts, which were much less rufous. The colour of the cere and feet, being light blue lead, differs from the plate in the 'Fauna Japonica.'

The occasion of my shooting several of these birds was during an ornithological excursion which I made, in company with one of the gentlemen of the British Consulate, round the shore of Hakodadi Bay, with the intention of doing something among the shore birds. We commenced soon after we got clear of the town by a terrible hunt after a kite, which we wounded when flying over our heads. Soon after this we shot a swallow (*Hirundo javanica*) which I had not before procured. We then pulled off our boots and socks, and tucking up our trousers walked along the sandy beach, generally in the water for the sake of coolness; for although there was a little breeze from seaward the August rays of the sun made themselves felt. We were not long unrewarded; for where a small creek emptied itself into the bay we came upon some sandpipers, and managed to bag a couple of Temminck's stints, also Tringa crassirostris, a species, by the way, very like the knot and the Kentish plover. We still continued along the beach, and a blackwinged kite was brought down. No sooner, however, had he fallen than another came over and was dropped upon the sandy shore; then another and another, until, without having moved from where we stood, we had five of these birds on the ground at once. After the slaughter we set to work to pick up the slain. We had a small Japanese boy with us, who carried my collecting-bag and box, but as he was already pretty well loaded with our heavy boots and the smaller birds we made the kites into a bundle, which I shouldered. It would have done many an ornithologist good to have seen us trudging homewards without shoes, stockings or coats, and followed by our faithful " ankow " (boy). When we reached Kamida, the village previously spoken of, we stopped at a native house of call, where we procured a cup of Japanese tea, and then went off for a bathe in the creek. But our ornithological adventures had not ended, for we came upon some ducks while bathing, and my friend started off in chase, perfectly naked, wading up the middle of the stream, gun in hand, with the water nearly to his armpits; he, however, did not get a shot. After this we walked into the town. The effect of the sun and salt water, from having walked so long with bare legs, did not wear off for some days, and we felt as if we had had mustard plasters applied to our shins and calves, which kept alive in our recollection for some time our ornithological walk.

I must conclude my notes on the Falconidæ by mentioning that although I frequently observed harriers in the neighbourhood of Hakodadi in the autumn in the fine slate and white plumage of the adults, yet I did not shoot one. In like manner on a few occasions I observed eagles, and two young ones were kept alive by a gentleman and sent to Shanghai. Their plumage was dark chocolate and black, with horn-coloured bill, and feet straw-colour. Of owls I did not preserve a single specimen, but Mr. Maximovitch considers that among his collection he had Strix nyctea, Otus semitorques and Scops japonicus, while I myself had three in confinement for some days. One of them was a small-eared species with yellow eyes; another a medium-sized eared one, also with yellow eyes; and a third a small species with reddish eyes. On another occasion, while on an excursion, when we slept near the foot of the volcano of Comanataki, I saw a large kind of owl at night.

[Omitting several pages of less interest, I proceed with Captain Blakiston's account of Parus rubidus and Sitta roseilia.]

Parus rubidus. A single specimen was selected from a number of this well-marked species; it was obtained from a native birdcatcher. Being a common species, and very lively and interesting in confinement, this is a favourite cage-bird with the Japanese. As the autumn draws on and the summer residents somewhat regain the freshness of their plumage, spoiled by the labours of incubation, while other birds which have passed the summer in more northern climes arrive in the neighbourhood of Hakodadi, the professed birdcatchers, boys, children, and others without any fixed occupation, devote themselves to the capture of live birds. Having a cage containing an individual of the species they are specially in quest of, they distribute small branches and twigs smeared with bird-lime in situations most tempting for the inquisitive, and, hiding themselves at a short distance, await the successive arrivals of those attracted by the voice or motions of the "'coy," consigning each successive capture to the dark regions of a canvas bag. Others roam about the woods with long and slender bamboo rods, covered near their points with bird-lime, and stealthily approach unsuspicious birds perched on trees or bushes, pushing the bamboo through the leaves as gently as possible until close to the bird, when it is brought quickly in contact with him, and fluttering his wings he becomes securely fastened to the stick and is dragged down. I have seen birds as large as the green woodpecker caught in this way, and am only sorry that in the hurry of leaving I neglected to bring away with me any of this superior kind of bird-lime, or to gain any knowledge of its composition.

Sitta roseilia. A beautiful species of nuthatch, of which but one specimen was preserved. It was obtained on the 20th October, during my return from a very interesting and pleasant excursion to the active volcano of Comanataki, about five-and-twenty miles to the north of Hakodadi, and near the southern shore of Volcano Bay, an extensive inlet from the eastern or Pacific side, which nearly cuts off the southern portion of the island of Yesso.

On this occasion we left Hakodadi (a party of English and Americans, six in number) on the morning of the 17th, on horseback, having pack-animals, in charge of Japanese servants, carrying our provisions and blankets. Skirting the shore of the bay for about four miles, along which, as the tide was out, we were able to ride on the smooth sand-beach, we thence followed the northern road across a broad valley, or rather plain, which lies between ranges of hills on either hand, and is otherwise bounded by the sea. After the fishing hamlets on the shore, the little villages of neat wooden houses with thatched roofs, surrounded by gardens and coppices, in the midst of well-cultivated land, were refreshing and pleasing to behold. Most of the crops were already housed; but some little rice, owned probably by the more lazy farmers, was not cut, and potatoes, beans and the long white turnips, called 'dygons,' were being rapidly got up. We halted in the middle of the day at a large village called Ono, where we baited our animals and refreshed ourselves on boiled maize-heads, pears, sweet cakes, tea and beer. Soon after leaving this place, we commenced to ascend, the road leading zigzag up the steep slope of a finely wooded ridge, until we reached the crest, where splendid views lay open on both sides. To the northward was the sharp peak and lava-covered sides of the volcano, with a beautiful lake reposing at its foot, and wild forest country all around; while behind us we looked down on the plain we had traversed, and the bay and peninsula of Hakodadi as a panorama. The weather was delightful, bright, clear and invigorating, and everything augured well for a pleasant excursion. Descending the northern slope of the pass by a road even more steep than that by which we had gained the summit, we soon reached the lake. Keeping the main road to the left, we skirted the shore, the road sometimes cutting off the points by passing through the woods, but coming to the lake again at the next bay, and at each successive return giving us a more beautiful view of the volcano and lake. The latter was reflected in the clear water with a distinctness that I thought I had never seen equalled, while the wooded points jutting out and some small islands gave an uncertainty to the extent of the sheet of water, and allowed scope for the imagination. The country all around was in a state of nature, heavily timbered with oak, ash, elm, beech, poplar, birch, and maple; and these, from the first frosts of the season, which had just occurred, had put on those colours so vividly impressed on the American traveller by the fall-dress of the woods of the more northern parts of that continent, while the weather was the exact counterpart of the "Indian summer." There were great numbers of ducks on the lakes, among which were the mallard, pintail, scoter, teal and a black duck with a peculiarly marked bill; but as we were travelling along quickly, I had only time to stop and shoot a couple for the pot. In the woods were numbers of migratory thrushes (*Turdus fuscatus*), the great black woodpecker (*Dryocopus martius*), other black-and-white woodpeckers, and a small species (*Picus kisuki*) sporting about in company with two or three kinds of tits, and the nuthatch named at the head of this paragraph. A jay (*Garrulus Brandtii*) and cuckoo were also shot during this excursion. Some geese were on the lake, but they kept themselves so far from shore as to be out of reach of our fowling-pieces. We put up for the night at a Japanese inn, and next morning started through the woods, under the direction of a native guide, to find a new route to the volcano. We had a tremendous day's walk through the thick forests, the only human beings whom we saw being some solitary charcoal-burners at the commencement of our journey; but after that, all was wild and unbroken forest. We were in constant dread of poisoned arrows, for we had been informed that there had lately been Inos (original inhabitants of Yesso) about, setting bows with poisoned arrows for bears. We saw one bear, but as I was the only one who carried a gun, and was then in the rear, he escaped. Later in the day we came to where the eruptions of the volcano had devastated the forest, and uprooted trees: logs and branches were thrown about in such confusion that it was only with the utmost exertion that we made any progress even at the slowest pace. At last, to the great joy of all, we got out on the cinder-slope of the volcano, but it was evening. Notwithstanding, three of the party started for the ascent (I had been up before); but one very soon turned back, and the other two, after making an unsuccessful attempt to reach the summit, were compelled to return, thoroughly knocked up and parched with thirst. We had guided them back by making an immense wood fire, it being quite dark when they arrived. Knowing that it would be impossible to reach the house we had left in the morning, we made our way down the side of the mountain to one end of the lake, crossed a stream which flows out of it towards the sea, and got to a deserted house which we knew of. As luck would have it, we there found a Japanese officer, with two other men, who had come for the purpose of making the ascent of the volcano, and had put up there for the night; so getting a lot of bundles of dry grass for beds, and cooking a mess of rice with four grouse (*Bonasia sylvestris*), which I had shot during the day, and which I sorely wanted to preserve for specimens, we filled our stomachs and then tried to sleep. But it froze hard in the night, and as most of us had no coats with us, it was impossible to keep warm. We therefore started a joke about bears being very numerous at this place, and got one of our party so interested in the matter that I believe, had it not been that we could not all restrain our feelings, he would have marched up and down outside, keeping guard all the night. Next morning we started at an early hour, after finishing the cold rice, walked round the lake through deep swamps, then struck the road, and arrived at the inn before mid-day. In the afternoon some of us rode some miles to the shore of Volcano Bay, returning home by moonlight; and the following day we travelled back to Hakodadi, where an earthquake, which occurred during the night, disturbed very few of us.

[Here again I omit a more technical part of the catalogue.]

Bonasia sylvestris. I brought home a single young male specimen, which Dr. Sclater considers to be of this species, and which

Mr. Maximovitch, who had killed them, pronounced to be identical with those of the Amoor. The length was 16½, and wing 6½ inches. Eye hazel-brown; bill dark horn-colour; feet leaden flesh; over the eye orange-red. This is, I believe, the first instance of this bird being found in Japan; probably it does not inhabit the more southern part of the empire. As far as I saw, it has the same habits as the ruffed grouse of North America (*B. umbellus*). Four fine specimens, of which the males had black throats, were shot on another occasion in the thick woods.

Respecting other game birds, Lagopus mutus is given in the 'Fauna Japonica,' on the authority of a native drawing; it will perhaps turn out to be a winter visitant to Yesso. The quail (*Coturnix japonica*) was collected at Hakodadi by Commodore Perry's Expedition, and plenty are caught and sold in the town; besides I shot some which I considered identical with the Chinese bird, but, my hands being full with other birds at the time, none were even skinned. I have been informed of pheasants being seen in the neighbourhood of Hakodadi, and that at a certain season of the year they are brought in for sale: these may, however, be brought across the Strait of Tsugar from the larger island of Nipon; and although I was three months at Hakodadi, I did not see a single pheasant, nor did I ever hear of one being obtained there in a wild state. Mr. Maximovitch marks both Phasianus versicolor and P. Sœmmeringii as having been seen in the hands of Japanese.

Podiceps minor or *phillipensis*. A male specimen, agreeing with the little grebe of Europe, is in my collection. I had another brought me one day, which proved to be young on dissection; it was too far gone for me to preserve it. The upper parts were black; under parts mixed gray. Length 13 inches, and wing 6·3 inches. Mr. Maximovitch considers he obtained the blackthroated diver (*Colymbus arcticus*). The rednecked phalarope (*Phalaropus hyperboreus*), identical with specimens from the Atlantic coast, was obtained by Commodore Perry's Expedition, as well as the hornbilled guillemot (*Uria monocerata*, Pallas).

I preserved no specimens of Anatidæ in Japan; but the following may be considered to belong to Northern Japan on good authority, except such as are marked doubtful:—Cygnus musicus (?), Anser (sp. ?), Anser bernicla (?), Anas boschas, Querquedula falcaria, Mareca Penelope, Anas fusca (?), A. nigra (?), Dafila acuta, Nettion crecca, Spatula clypeata, Fuligula clangula (?), Mergus serrator, M. merganser (?).

The Japanese are very expert in netting water-fowl, and they bring in numbers to Hakodadi caught in that way. For ducks and teal the usual method is to clear away the grass from a swamp for a space of about 35 by 20 yards, so as to form a clear surface of open water, likely to attract the birds at feeding-time. Across this several nets are stretched, which are fastened to cords attached to stakes on either side, and hang vertically over the water, being about 2 feet above it at the bottom, and about 6 feet high. The net is made of fine twine, and with large meshes, so that it is not easily seen, and, being allowed to bag, easily entangles the birds when they fly against it in skimming over the surface of the pool before alighting. The evening is the principal time for the operation, and men sit watching the nets from small turf huts or screens made of branches. These duck-catchers mostly occupy themselves in cutting grass during the day. In October I saw a great many of these places, and probably the same plan is adopted in the spring.

One cormorant at least is very abundant at Hakodadi, and Mr. Maximovitch obtained a specimen which he called Carbo cormoranus of the 'Fauna Japonica.'

In closing this sketch of the birds of Northern Japan, so far as they are at present known, my thanks are due to Dr. P. L. Sclater for having examined my specimens, and as editor of the 'Ibis' for correcting and inserting scientific names of species and references to authorities. I have only to urge as an excuse for a more extended list that, during the latter part of my three months' residence in the country, I was engaged on some work at that time of more importance, although not so interesting to me as Ornithology. As we sailed steadily out of the bay before a light breeze, on the 6th of November, and passed between the mountain-head and the whitened cliffs of the opposite shore, shoals of bonitos played around our vessel, chasing the smaller inhabitants of the clear sea-water; the peak of the volcano of Comanataki, visible in the distance, grew dimmer and dimmer; the shore lines became gradually indistinct; the opening to the broad Pacific seemed to our eyes to become narrower and narrower; and we said good-bye to Hakodadi.

[In the parts omitted for the sake of brevity the following birds familiar to English ornithologists are mentioned: the stonechat, the gray wagtail, the cole tit, the great spotted woodpecker, the cuckoo, the siskin and the mountain sparrow.—*E. Newman.*]

Barn Owl Preying upon Fish?—For several nights past I have observed a barn owl about the harbour, but this evening, during a dead calm, and while the moon was shining very brightly, the bird appeared skimming rapidly within a short distance of the water. Suddenly it dropped towards the surface, and then instantly rising continued its flight towards the Isle of Sheppey. Some minutes afterwards it reappeared, repeated the same act, and again and again went throught almost precisely similar manœuvres, until I had witnessed the occurrence perhaps eight or ten times. It is remarkable that the bird was never seen returning from the Isle of Sheppey; it invariably came from the direction of the opposite shore, so that the moon cast the shadow behind instead of before, and thus the fish could receive no notice of the approach of the enemy until it was close upon them. I was at too great a distance to see whether the birds' feet actually touched the water, but there can be little doubt not only that they did so, but that a fish was occasionally captured, for sometimes the bird after stopping rose hurriedly, and, describing a wide circle in its flight, returned near the same spot, and then made an apparently more successful pounce. Once it flew across without making any stop, but in this instance it returned sooner than usual. Several men belonging to this ship also witnessed the above, and one of them, a native of Kent, told me that when he was a boy, he used very often to find fish bones in a barn owl's nest, but although his assertion may be open to doubt, the accounts given by various authors have long since established the fact that owls do occasionally prey upon fish. I myself have found the remains of fish in the stomach of the tawny owl.—*Henry L. Saxby; H. M.S. "Devonshire," Sheerness, October* 9, 1862.

Notes upon the Migration and Song of the Skylark.—During the greater part of the day skylarks have been flying over in a south-easterly direction, in the teeth of a stiff breeze. They passed with a strong and steady flight, sometimes singly, but more frequently in small parties of perhaps half-a-dozen or more, keeping rather high, and occasionally uttering a short chirping note. I am at a loss to account for their movements, seeing that telegrams from the north still report the weather mild and seasonable. In Shetland this species is partially migratory; it is exceedingly abundant in summer, but no sooner does the cold weather set in than the numbers begin rapidly to diminish, and the few which remain collect into small flocks, frequenting stubble fields, and in very severe seasons farm yards. Between the middle of September and the first fortnight in November I have several times heard one in full song, and that, too, in damp, misty weather. During the summer they sing not only from sunrise to sunset, but even throughout the whole of the long cloudless night, so that the song may be heard almost incessantly for days and nights together.—*Id.; October* 15, 1862.

Thrush Singing in October.—Is it not unusual for the song thrush (*Turdus musicus*) to be heard singing during this month? I have twice this day heard one, and suppose that this uncommon occurrence may be attributed to the warm, showery weather of this day.—*Hugh Hornby; Preston Rectory, Wellington, Shropshire, October* 11, 1862. [My own experience is that the thrush is usually silent in October—*E. Newman*].

Occurrence of the Bluethroated Warbler at Brighton.—On the 1st of October a labouring boy brought me a specimen of the bluethroated warbler (*Sylvia suecica*). It proved to be a male of the red spotted variety, having the spot on the fore neck of a dark chestnut colour, which I believe is different from others that have been obtained in this country. The boy was walking amongst some thick furze on the Downs when he observed the bird, which he supposed to be a redstart, flying very swiftly from bush to bush, not uttering any note. It perched on the tops of the furze, and spread its tail in the manner of a wheatear, never jerking it like a robin. He knocked it down by throwing a stick at it, and afterwards caught it. We kept it alive a few days, and thus had a good opportunity of watching its movements. It kept very much to the bottom of the cage, and whenever disturbed would spread out its tail extremely wide. I have now mounted it, and it makes a fine specimen.—*Henry Pratt; 44, Ship Street, Brighton, October* 18, 1862.

Corvus americanus: Corvus corone of Wilson.—No one the least conversant with the notes of the two could fail to notice the difference between the American barking, and the European croaking crow, though Wilson remarks, "The above description agrees so nearly with the European species as to satisfy me that they are the same, though the voice of ours is said to be less harsh, not unlike the barking of a small spaniel." The fact is, its note or cry is so like the barking of a dog that the most practised ear might be deceived, but like the snipe it may, according to Wilson, "be partially changed by difference of climate." Wilson says "the eggs are four, of a pale green colour, marked with numerous specks and blotches of olive," but Macgillivray states that the eggs of the European crow "are from four to six, of a pale bluish green, spotted and blotched with dark umber or clove-brown, and purplish gray." Though I have taken the eggs of the American crow—five in number—I will not venture to describe them; nor can I compare them, having no eggs of the European species, but Wilson's and Macgillivray's descriptions neither agree as to the colour or number of the eggs. Though common it is by no means numerous in Upper Canada, and is, if possible, still more shy and wary than the European species, so that I found considerable difficulty in procuring a specimen, but having at last winged one, it ran so swiftly to a heap of large stones, on which it mounted, that I had some trouble in securing it. Its cries brought other crows within shot. Having taken it home and amputated the wounded part of the wing, it was placed in a basket, but not until it had dug its claws into my hand, and struck the cheek of a looker-on with its formidable beak. It is a very handsome bird in adult plumage, jet-black, with the exception of the outer webs of the quills, and the tips of the feathers of the back, which have a glossy bluish tinge. It is, I think, somewhat slighter and smaller than the European crow, its length being but 19 inches. Extent of wings 39 inches. Wing from flexure 13 inches; fourth quill longest; fifth but 1-tenth shorter; third 3-tenths shorter than the fourth; first 3¼ inches shorter than the second. Bill arched and very long, measuring 2 inches 9-tenths along the ridge; from the gape 2¼ inches. Upper mandible notched at 1½-tenth of an inch from the tip. The tail, which has twelve feathers, is rounded, and 7¾ inches in length. Tarsus 2¼ inches. Thigh 3½ inches. Middle toe 1½ inch, claw 6½-tenths; inner toe 1 inch 1-tenth, claw 6-tenths; outer toe 1 inch 1-tenth, claw 5-tenths; hind toe 1 inch, claw 8-tenths. Nostril nearly circular, quite concealed by the recurved feathers, some of which are 1 inch in length. Eye black, about 3-tenths of an inch in diameter, It would thus appear that the American crow not only differs from the European in voice but in size, and though a smaller bird has the bill more elongated.—*Henry Hadfield; High Cliff, Ventnor, Isle of Wight.*

The Cuckoo and the Gooseberry Grub.—I had always supposed that none of our British wild birds would touch the larva of the sawfly, Nematus ventricosus, which has for the last few years proved such a pest in our kitchen gardens, and which is vulgarly called the gooseberry grub. Often and often have I watched the sparrows and various warblers, in the anxious hope that I might detect them in the act of swallowing one of these noxious insects, but I have always watched in vain. I have gathered handfuls of them, and given them to fowls and ducks, but they invariably turned from them in disgust. Towards the end of August, however, I happened to look out of my study window one morning after breakfast, when my eye rested upon a young cuckoo perched on a red-currant bush immediately opposite the window, and busily engaged in picking something off the branches. The tree was swarming with larvæ of N. ventricosus, and upon close inspection I found to my no small delight that he was making a hearty breakfast on this obnoxious pest. He flew from bush to bush for about half-an-hour, and then, having I suppose satisfied his appetite, took his departure. I have met with several gamekeepers who were stupid enough and ignorant enough to kill every cuckoo they come near, and whose masters did not possess sufficient ornithological wisdom and common sense to forbid such an act of wanton cruelty. Perhaps the foregoing remarks may in future save the life of a stray cuckoo or two.—*H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, October* 26, 1862.

[I have long been aware, from personal observation, of the interesting fact mentioned by Mr. Crewe: it is recorded in the 'Field' newspaper for May last.—*E. Newman*].

Abundance of Young Cuckoos at Deal.—A great number of young cuckoos are now being caught by the hand in and about gardens in this neighbourhood. Some fly into houses and sheds, and they are so abundant as to be noticed by the residents. They are extremely tame, and those which have passed through my hands are fat and in good condition. I believe them all to be young birds not yet able to take their flight.—*H. J. Harding; Deal, September* 20, 1862.

Occurrence of the Hoopoe at Deal.—A fine female hoopoe, shot near Deal in August last, has lately been brought to me to be preserved. It was very fat and in fine plumage.—*Id.*

Occurrence of the Hoopoe and Spoonbill in Surrey.—A fine specimen of each of these birds was killed a short time ago in this county, the first within a mile of this town, and the latter at Frensham Pond, where so many rare visitors have been killed, about four miles from Farnham.—*W. Bridger; Guildford, October* 30, 1862.

Occurrence of the Gray Phalarope in the Isle of Wight.—A beautiful specimen of this bird was shot on the 9th of October in a small pond in the centre of this village. Though surrounded by several persons it swam about with the greatest coolness, as if in its natural element—the sea. This morning another was seen in Freshwater Bay. A terrific sea was running at the time, but the beautiful bird seemed like a cork floating on the mighty waves. It was shot at three times, and hundreds of stones were thrown at it, none of which injured it, and just as I got on the beach it took wing over Afton Downs, and escaped its numerous persecutors.—*Henry Rogers; Freshwater, Isle of Wight, October* 22, 1862.

The Sandpiper a Diver.—In corroboration of Mr. Knox's statement (Zool. 8195), about the common sandpiper's diving I have to state the following. In the autumn of 1853, while staying at Mr. J. H. Hamilton's, Abbotsdown, near Dublin, I winged a common sandpiper while flying across a pond in his grounds. It swam directly to the shore, but on my approaching it, took to the water again and dived along the coast. I distinctly saw its motions under water, and saw it occasionally run on the bottom. I could not secure it without another shot. It used its wings under water with quick short jerks. The hoopoe has been noticed in this neighbourhood this autumn. Mr. Alfred Pearce, of Chantrey, saw one at a mill in this vicinity on the morning of the 9th of September, but had no gun with him at the time. He has shot the bird before, and is well acquainted with it.—*G. C. Green; Modbury Vicarage, October* 20, 1862.

Observations and Remarks on Scolopax gallinago and Corvus corone of Wilson. — Both these and other species have by some writers been considered identical with those of Europe, though they specifically differ, either in habits, plumage or organization. Both species, for instance, though bearing so strong a family likeness to those of Europe, are readily distinguishable by the careful observer; so that one cannot but feel surprised that such an experienced ornithologist as Wilson, to say nothing of the absurd notions of Buffon and other authors of the old school, should have confounded them. The American snipe, he says, " if not the same, has a very near resemblance to the common snipe of Europe;" then suggests whether it may not be " partially changed by difference of climate," yet how that could have given it the extra tail-feathers he does not explain, but it is a fact that ought to have settled the question, or rather have prevented its having ever been raised; and though they do not greatly differ in size, they do in colour, many of those I examined being darker than the European bird, particularly about the back and scapulars; however, the skin with which they were compared may possibly have been somewhat faded. And to crown all, the American snipe is a percher. This I know will not be credited by closet-naturalists, or by those authors who, having committed themselves to a contrary opinion, are not open to conviction: " A man convinced against his will is of the same opinion still;" " Straining at a gnat, yet ready to swallow a camel;" the old woman could believe in " mountains of sugar and oceans of rum," but nothing would convince her that there were flying-fish in the world. To prove that snipes perch I will now give an extract from my notebook: — " St. John's, Newfoundland, July 23, 1857. There being nothing particular to see in the town but the cathedral, or peculiar except the vast stages for curing cod erected on the precipitous banks of this noble land-locked harbour, I sallied forth to explore the neighbouring woods and swamps in quest of birds, having an eye to snipes, which the spongy nature of the soil led me to expect. A few robins and other birds were shot as I traversed the bush, not tall trees as in Canada, but pine and larch of a dwarfish growth, which on these bleak exposed hills and uplands, covered with the raspberry, gooseberry and strawberry, seldom exceed fifteen or twenty feet in height. Birds appeared scarce; I did not, I think, observe more than a dozen species. The most striking was a small active yellow bird, Sylvia citrinella I believe (a true willow wren), subsequently found so abundant in Canada. Having come to a promising marsh, I began to beat it in a regular manner, and ere long was rewarded by the springing of several snipes, which were shot in a sportsman-like manner, *i. e.*, on the wing. I then descried, on the topmost bar of a fence carried through the swamp, what appeared to be a somewhat strange-looking bird; so, being bent on securing rarities, I approached it as quietly as a huge pair of water-boots would admit, bringing my gun to the ready, but there was no need of such caution, the bird being seemingly in a deep reverie, out of which it was doomed never to awake. Fearing to spoil the specimen if I took many more strides in advance before firing, I knocked it over. It proved to be what I had half suspected, a snipe. My eyes thus opened, three more were on this and the following day shot in a similar manner, — a fourfold proof of the perching habits of Scolopax americanus." Though the 23rd of July, 1857, was one of the hottest days I ever remember, there had been the previous night a heavy fall of rain, which may possibly account for the number of snipes found basking in the sun. When it is affirmed that the partridges of Southern India and of Canada are perchers, the statement is received without question. My acquaintance with snipes dates from the year 1825, when I first began to shoot them, and I have in this country, in less than two seasons, bagged eight hundred; consequently I ought to know a snipe from a sandpiper, even on the wing; but these birds were handled, and one of them skinned; the rest I presented to the commander of the 'Circassian,' who said that though he had known many of his passengers go out snipe-shooting, I was the first who had brought any on board. They were preserved in ice and taken to Portland, Maine. Should there still be unbelievers, as doubtless there will, let them take ship for St. John's, and, though not very crack shots, may there shoot a snipe. I shall be ready to afford them every information, and point out where the snipes were found napping on the 23rd and 24th of July, 1857. Whether the European snipe perches I cannot undertake to say, but that it may do so I think not unlikely. A friend in the North, who has a good knowledge of birds, informs me that he has seen a snipe perched on a stone. Nor would it surprise me to hear that they had been found perching, during the heat of the day, on either rail or dyke. The following description (taken in the flesh) of one of the darker specimens of Scolopax americanus is extracted from my note-book:—"On comparing it with four others I find it considerably darker than the rest, and the scapulars more elongated. It is 11 inches in length, 17 in extent of wings, from flexure 5 inches 4-tenths. Bill along the ridge 2 inches 6-tenths. Tarsus 1 inch 2-tenths. Middle toe 1 inch 1-fourth, claw 2½-tenths; inner toe 1 inch 1-tenth, claw 1½-tenth; outer toe 9-tenths, claw 1¼ tenth; back toe 3½-tenths, claw 1-tenth. The elongated scapulars and posterior feathers are black at the base and centre, margined on the outer webs with white tinged with yellow, and on the inner with small, oblong, reddish yellow and white spots on a ground of black on both webs, uniting on the shaft. Near the shafts on both webs are rows of still more minute spots of rufous, which, uniting at a quarter of an inch from the extremity, form an acute angle. Two of the posterior feathers are 2¼ inches in length, the axillaries being also very elongated, some of them measuring 2½ inches; they are of a pure transparent white, with regular diagonal bars. Many of the scapulars, though sooty at the base, are of a pure glossy black towards the ends, which are slightly tipped with white. There are on some of these feathers three or four irregular bars of bright reddish yellow, with two and three white spots on the exterior margins. The upper mandible is of a dark horn colour, with a reddish tinge; the lower is of the same colour, except at the base, which is light. There is a line of reddish brown down the centre of the head (which is black), and bands of the same at the sides, from the base of the upper mandible to the nape. There is also a patch of black from the gape to near the eye, bordered by gray. From the nape to the shoulder the neck is rufous, but each feather is black near the shaft, and some of them are margined and tipped with white. The feathers of the anterior part of the back are black, but mostly with the outer webs partially white or reddish yellow; and some of the posterior feathers are grayish black, margined with white, but the greater part are reddish yellow, barred with triangular transverse black spots, the shafts being of the same colour. Upper tail-coverts of a yellowish brown, with transverse black markings; some of the feathers tipped with white. The tail, which is rounded, is 2¼ inches in length; it has sixteen feathers, the centre longest. They are all black at the base, except the three exterior ones. The first lateral feather is white, broadly barred with black crossing both webs, and it is slightly tipped with the same: the second is almost similarly marked, except that the white on the centre of the feather is tinged with rufous between the first and second black bar, and there is a minute black spot at the tip: third black from the base for more than half its length, with a spot of yellowish white near the shaft, and two more spots of the same colour on the margin of each web; above that there is a broad band of pale reddish brown, bordered with white, succeeded by an irregular band of black; the rest of the feather white, tinged with yellow towards the extremity, which is slightly margined with black, the latter colour gradually increasing on the rest of the feathers: fourth almost similar, but the white at the extremity is tinged with yellow, and the black spot at the tip increases in size; this feather also is margined with black on the outer web: the fifth differs only from the last by having the reddish brown colour on the centre of the feather darker, with more black on the outer margin and at the tip, and the white towards the extremity of the feather has still more of the rufous tinge: sixth very like the former, except that the rufous tinge gradually darkens; the transverse black bar runs somewhat more diagonally across the feather, and the black at the base, bordering the centre patch of rufous, takes a diagonal form corresponding to the bar near the extremity: seventh almost similar, but the black bar is more inclined, so is the black patch at the base: the eighth is almost wholly black, the transverse band extending to the margins, and is prolonged on and near the shaft to the tip, which is also margined with black; the upper edge of the lower black portion of the feather is irregularly shaped, and the reddish brown colour is darker. The wing has twenty-five quills—the first longest, but the second only the tenth of an inch shorter; the rest of the primaries regularly graduating, the secondaries increasing, so that the longest is but half an inch shorter than the first primary. The quills are black, tipped with white; the first has the shaft white, except towards the extremity, where it becomes dark; the outer web very narrow, margined with white; the inner web is altogether dusky: the second quill is of a sooty black, very slightly margined with white on the outer web, and tipped with the same: third quill black, with the exception of being slightly margined on the inner web and at the tip with white: the rest of the primaries are dusky, and the white on the inner margins and at the points gradually increases: the white of the secondaries, which are incurved, is much broader, with the exception of the last elongated ones, which have very little white about them, except at the extremities; they are soft, glossy and 'almost transparent, of a dusky black on the inner webs, but towards the extremities there are a few spots and bars of rufous, besides some white patches on the margins; the outer webs are black, transversely and diagonally marked with zigzag bars of reddish brown, margined with white and tipped with the same, except at the extremity of the shaft, which is black. Some of these feathers, as well as scapulars, are very peculiarly marked, appearing as if another and smaller feather, with a rufous border, were laid on the top of a black one with a white margin. Upper primary coverts black, tipped with white. Secondary coverts black, with a spear-shaped spot of rufous in the centre; they are margined with white and light reddish brown, and have a spot of black at the tip. Under-wing primary coverts gray, spotted with white on the margins, and tipped with the same. The under secondary coverts, which are more elongated, are gray, barred and tipped with white. Chin and upper part of throat grayish white, with minute dark brown spots, and on each side of the neck there are narrow elongated black patches bordered with gray; but on the breast, as well as towards the sides, the feathers are black, broadly margined with grayish yellow, and tipped with white. Lower part of the breast barred with black and white in about equal proportions. Belly white. Feathers near the vent black, broadly margined, spotted and tipped with reddish yellow. Under tail-coverts, which reach to within a quarter of an inch of the extremity of the tail, are reddish yellow, with irregular black bars. Tarsus and toes dusky, with a greenish tinge." Having as yet had no opportunity of studying the habits of Scolopax Wilsoni, I shall only observe that I have found it more sluggish than the common snipe of Europe, and somewhat less rapid of flight. They are exceedingly fat, the weight of one of the largest being about five ounces. The two extra tail feathers proving it to be distinct from the common snipe of Europe, I have thought it unnecessary to do more than allude to the difference in the plumage, though the second quill being margined with white is worthy notice.—*Henry Hadfield; High Cliff, Ventnor, Isle of Wight.*

[I must entreat that my readers will not enter on a discussion as to the perching of snipe: the subject is as interminable as that of vipers swallowing their young. Does my correspondent consider that Scolopax gallinago, S. americanus and S. Wilsoni constitute one species, two or three?—*Edward Newman.*]

Occurrence of the Knot in Lancashire in August, and its Eastern Range.—Being at Southport, on the Lancashire coast, on the 29th of August last, I noticed a curlew and sandpiper hanging together in a fishmonger's shop. A friend who was with me being fond of birdstuffing purchased the sandpiper and set it up, but subsequently not being certain of the species he forwarded it to me. On examination it turns out to be the knot (*Tringa Canutus*, Linn.) in a state of plumage intermediate between the summer and winter dress. It remains in my possession, and I send you this notice as its rather early arrival may be of interest to ornithologists who look to the 'Zoologist' for records of extraordinary occurrences in date and species of British birds. I may observe that I have looked back in the 'Zoologist' for several years, and can find but one notice of it in the month of August, which was in the Isle of Wight. With respect to the eastern range of the knot, Mr. Yarrell mentions his inability to trace it beyond Europe, except a single notice by Mr. Blyth of Calcutta. Mr. Blyth may however have confounded it with a closely allied species, Tringa crassirostris of Temminck and Schlegel's 'Fauna Japonica,' which I obtained ('Ibis,' iv. 330) in the northern island (Yesso) of the Japan group last year. I have also searched through different local lists—and the value of such lists cannot be overrated—published at various times in the 'Zoologist' and 'Ibis,' and, except a note of its having been seen only ('Ibis,' iii. 240) near Cawnpore in India, I cannot find any statements of its occurrence east of Europe. I should mention that besides considerable difference in markings the eastern bird is larger, being an inch and a half more in total length, and nearly an inch longer in the wing, no unimportant disparity in birds of that size.—*Thomas Blakiston; London, October* 17, 1862.

Occurrence of the Manx Shearwater at Sheerness.—Yesterday afternoon I saw a specimen of the above in this harbour. It was sitting rather deeply in the water, and although making vigorous use of its feet was being so rapidly carried backwards by the ebb tide and heavy south-west gale that it was occasionally compelled to take wing in order to avoid being drifted too close to the ships. It rose from the surface with very little effort, and had rather a graceful appearance when upon the wing, but its mode of flight was peculiar, owing to the bird's strange but well-known habit of making an occasional rapid stop, apparently with no other object than that of dashing aside the water with its breast, immediately afterwards ascending in a gentle curve. Although it was at times completely at the mercy of the wind and tide it seemed to be perfectly at ease, dipping and preening its feathers, and sometimes rising upon its feet as it flapped the water from its wings. The poor bird was engaged in this manner when it was killed by a shot from a boat. It proved to be a female in good condition, but the stomach was quite empty.—*Henry L. Saxby, H.M.S. "Devonshire," Sheerness, October* 21, 1862.

Occurrence of the Pomarine Skua in the Isle of Wight.—On the 22nd inst. I went out with my gun, and had the pleasure of shooting a magnificent specimen of the pomarine skua. It is a male in fine adult plumage. There were five of them together, and I had great difficulty in getting a shot at them, as they were very shy. After waiting a long time watching their rapid flight this one singled itself from the rest, and dashed much like a falcon in its swoop within a few yards of where I was concealed waiting for them, and the next instant it fell to my gun. I believe this is only the second instance of its occurrence in the Isle of Wight. The other is recorded in the 'Zoologist' (Zool. 978). A specimen of the Manx shearwater was shot in August, by Mr. G. Baird, near the Needles, and a second specimen was obtained many years ago near Yarmouth (Zool. 978).—*Henry Rogers, Freshwater, Isle of Wight, October* 23, 1862.

Coluber lævis identical with C. dumfrisiensis.—Mr. Buckland's communication on the birth of the six baby snakes is of great interest; and I shall anxiously wait further information as to the movements and food of the little strangers; but there is one fact in the bibliography of British reptiles that seems to me of still greater interest, and that is, that a supposed new snake was described a quarter of a century ago, as inhabiting Scotland, which agrees in its distinctive characters with Coronella austriaca. I allude to the Coluber dumfrisiensis of Sowerby, which was captured near Dumfries by Mr. J. W. Simmons, and described and figured in Sowerby's 'Miscellany,' p. iii. t. iii. and again in Loudon's 'Magazine of Natural History,' ii. 438, and again described in Bell's 'British Reptiles,' at p. 60 of the second edition. The first point of similarity I would observe is the smoothness of the scales; all the authors in describing C. dumfrisiensis say, "the scales are extremely simple, *not* carinated; the word *not* italicised, as in this quotation, proves that the new species could not be referred to the adder or the common snake, the scales in both these species being distinctly keeled. Mr. Bell is inclined to believe that the supposed novelty was a specimen of the common snake, and he seeks to overcome the difficulty of the smooth scales by suggesting that it was "very young." This appears to me most unsatisfactory, since I know of no reptilian scale which changes its form and structure as the animal advances in age. I have also to notice the number of ventral scales or scuta, which in the four supposed species stands thus:—Coluber natrix (common snake) 170, C. austriaca or lævis (lizard snake) 160—164, C. dumfrisiensis (Dumfries snake) 162, Pelias berus (the adder) 140—150. Thus the Dumfries snake and our supposed novelty correspond exactly in the number of ventral scuta. These two characters—the absence of a keel on the dorsal scuta, and the agreement in number of the ventral scuta—seem to go far to establish the positive identity between the two species which have been called dumfrisiensis and austriaca, after the localities in which they have been accidentally observed. Some doubt may exist as to which specific name should be adopted; but this difficulty is in some measure removed by Dumeril and Bibron, in their 'Erpétologie Générale,' vol. vii. p. 610, and also Schinz, in his 'Verzeichniss,' vol. ii. p. 45, having adopted the appropriate and descriptive name of "lævis." On the subject of names I may also remark that I see no reason for changing the old familiar generic name of Coluber for the modern, and, as I think, inappropriate name of Coronella; and I would suggest that hereafter all the three later names be dropped and forgotten, and the old and appropriate name of Coluber lævis be restored to this lizard-eating ophidian.—*Edward Newman, in 'Field' Newspaper, October* 18, 1862.

Coluber lævis not rare in Sweden.—I see by your paper of September 13th that a snake (*Coluber lævis*, Lacep., *Coronella austriaca*, Gmel.) has been lately added to the British Fauna, and the only thing that surprises me is that it has never been identified in Britain before, for it is common on most parts of the Continent, and by no means rare in Sweden. It is met with as far north as Upsala, but nowhere more common than around Gothenburg. I take it that its general resemblance to the common snake often causes it to be overlooked by the casual observer. We call it in Sweden the "slat snok," or smooth snake, and in this lies the principal distinguishing mark between the C. lævis and the C. Natrix, or common ringed snake. In the common snake the scales on the upper parts of the body are imbricated, those on the back being lancet-shaped and distinctly keeled along the middle; whereas in C. lævis the scales are oval, altogether smooth, without the slightest indication of a keel. As far as I can observe, with us the C. lævis appears to be partial to stony tracts; they are perfectly harmless, and their principal food appears to be mice; and one which was kept a long time in confinement would not touch a frog. With us they rarely exceed about two feet in length; they appear to be of a much tamer and more companionable nature than the common snake. A most singular thing is that, according to Schlegel, the female brings forth living young. He says, "The eggs take three or four months to hatch inside the mother, and in the end of August she brings forth about twelve young, which are at first altogether white." If this is the case, is it not the only non-venomous snake that does so? I ask for information.—*Mr. Wheelwright, in 'Field' Newspaper, October* 18, 1862.

The Iguana not an Inhabitant of Tasmania.—I observe a correspondent writes (Zool. 8006) of the iguana of Tasmania. This calling of creatures by erroneous names leads to endless confusion. This monitor group is commonly designated "iguana" also in India; and to the genus Hydrosaurus must be referred the Tasmanian reptile, which is utterly different from the veritable iguanas of the New World. As well write of the marsupial Thylacinus of Tasmania as the hyæna or the tiger, names which have been misappropriated to it in the colony.—*Edward Blyth; Calcutta, September* 17, 1862.

Capture of the Sword Fish (Xiphias Gladius) *on the Essex Coast.*—On the 23rd of last month some dredging-men in the employ of Mr. Wiseman, oyster merchant, of Poglesborn, in this county, discovered a large fish in shallow water in a branch creek of the river Crouch, near Potten Island, and on rowing to it they found it to be a sword fish: it had plunged about, trying to get into deep water, and had driven its sword deep into the mud. They captured it alive, and found the sword to measure 3 feet, the length of the fish being 9 feet 1 inch, the weight about 2½ cwt., and the girth 46 inches. The sword is flat, an inch wide at the point, and a piece of it appears to have been broken off some time. — *C. Parsons; North Shoebury Hall, Essex, November* 4, 1862.

Lecture on Spiders.—At the Brighton Royal Literary and Scientific Institution, on Tuesday evening, the 6th of October, Mr. J. Robertson read a paper on spiders, which he said was not a compilation, but the result of original observations and experiments. Those whose habits he had watched were of five kinds:—1. Tunnel spiders, which formed tunnels several feet deep in the earth, lined throughout with silk, and closed at the entrance with a door on hinges, which the spider could hold fast on the inside against the attacks of small birds or other enemies. That the creature might not perish when thus shut up for want of air, all round the doorway were small ventilating tubes. It was a native of the West Indies, the Ionian Islands and Australia. The fangs of this creature worked horizontally, and it had six eyes, arranged horse-shoe fashion, with the opening in front. Seven years ago a specimen had been found near Hastings, confirming an old tradition that they did exist in England; and he had himself recently found one near Brighton. The tube of this creature, found in a lump of clay, was produced, as also another specimen (the upper part, including the trap-door) from Australia. 2. Spiders, tiny red creatures, which skate on the surface of the water. This, he believed, they accomplished by entangling in the brushes at the end of their feet warm, and, consequently, light globules of water, and with these as runners skimmed over the colder and denser water forming the strata below. 3. The diving spider, which makes a small cell, in the shape of an egg, beneath the water, and attached to the stem of some plant, but not of spun silk, the wall being formed of a secretion from the mouth. This creature collects globules of oxygen gas by the electrical attraction of the hairs of its body, and conveys them into its egg-shaped house, thus obtaining a supply of vital air beneath the water. Some spiders enclose their cast-off skins in a silken bag, possibly to stop the escape of noxious vapours. 4. Certain spiders can fly: they dart out threads from their spinners in a horizontal direction to a considerable distance. He saw one put out a thread six inches long, and, turning slowly round, "box the compass." Lister witnessed the same fact two hundred years, and Latreille thirty years ago, though Blackwall denies that spiders have the power. There are spiders which send out their threads as floats, and are carried by them through the air. Frequently little cobwebs float over the fields, and if, when they descend to the earth, they be examined, are found each to contain a little red spider. In 1822 the yeomanry at Kidderminster fired a salute in honour of George the Fourth's coronation, when down came a shower of these little red spiders. 5. Labyrinth spiders form a web in shape like a wide-mouthed funnel. Three of these creatures he placed in a box, with a glazed aperture at the top, so that he might observe their habits. Each spun a labyrinth near the opening, where the food was introduced. A blue-bottle fly they easily killed by leaping on his back and plunging the mandibles into his thorax. A beetle gave them more trouble, but they spun threads across his path as he walked about, and when his legs on one side became entangled in these threads, they tilted him over and so despatched him. They killed a moth by leaping on his back, but carefully avoided the strokes of his quickly vibrating wings, and a grasshopper by first clinging to one of his legs. Lastly, Mr. Robertson mentioned that he discovered between thirty and forty spiders working together, co-operatively, to form a large web covering a lump of clay, which he produced, with the web upon it. Some acted as overseers, others as woofers and others as warpers. Some conversation followed, and Mr. Robertson concluded by observing that studying the habits of spiders might even lead to important results, for if we learned how these wingless octopods can fly, man, the wingless biped, might solve the problem of aërostation.

On some new or little-known Macro-Lepidoptera from England.

By Dr. HERRICK-SCHAFFER.

1. AGROTIS ASHWORTHII, *Doubleday.*

THIS insect was discovered by Mr. Ashworth in Wales, and was first described by Mr. Doubleday in the 'Zoologist' for 1855, p. 7449. Mr. Stainton introduces it into his 'Manual' (1857), p. 228, but says the caterpillar is green, with a pale dorsal line and whitish lateral lines, both of which are wanting in a figure forwarded by Mr. Doubleday. This is dark brown-green, with a rufo-ferrugineous head, and a large black oblong spot on either side of each segment. * Dr. Staudinger is not acquainted with it, but quotes A. vallesiaca, Stainton's 'Annual,' 1855, p. 41, figure 2, which figure can in no case refer to my A. vallesiaca, and just as little to A. Ashworthii, unless it be regarded as quite incorrect and unserviceable.

Agrotis Ashworthii is distinguished from A. candelisequa by its persistently smaller size; the anterior wings somewhat less expanded posteriorly, and of a much darker blue-gray tint, without any mixture of reddish; much sharper and thicker black markings; the anterior double line more vertical and straighter, the central shade blacker and broader; the teeth of the posterior dentated line not thickened at their tips, so as to form spots; the waved line throughout of a darker shade towards the base, and but little more strongly expressed at the costa.

In my 'Systematic Arrangement' it would be placed immediately next to A. grisescens, fig. 418, which I do not possess, and from which it would be distinguished as follows:—the anterior wings much narrower, the ground colour much darker violet-gray, the anterior dentated line more vertical, central shade blacker, waved line shaded with darker anteriorly, and posterior wings more blackish and without a curved line. At all events a comparison of the original examples of A. grisescens is necessary.

2. AGROTIS LUNIGERA, *Stephens.*

Pretty well figured and described by Stephens; however, my fig. 525, A. Trux, *var.*, is almost a better representation of the female, only in this figure the fore wings are somewhat too broad posteriorly, the reniform stigma too white towards the base, and the hind marginal line too distinct, more especially too pale at the costa towards the hind margin.

---

* I have given a very minute description of this larva at p. 7677 of the 'Zoologist.'—*Edward Newman.*

The male is essentially distinct by its pale fuscous coloration; hence the orbicular stigma appears far less white, but the black marking comes out all the sharper, particularly a blackish spot, which is wanting in the female, is observable on the costa before the waved line.

This occurs in England on the sea-coast, especially in the Isle of Wight; it appears in July and August, and varies very little. It may be distinguished with certainty from the extremely variable Agrotis Trux by its somewhat smaller size; by the anterior wings, not so much dilated posteriorly; by the black border to all the spots; by the claviform stigma, almost entirely filled in with black; by the very different but persistent coloration of the two sexes; and by the constantly paler orbicular stigma.

3. AGROTIS LUCERNEA, *L.*

Is not unfrequently reared from the larva in England. The specimens from Wales are always smaller and darker than those from the southern districts of Great Britain.

4. AGROTIS NEGLECTA, *H.*

Abundant in Scotland, mostly the *var.* cerasina.

5. DIANTHŒCIA CAPSOPHILA.

Discovered in Ireland by Mr. Barrett, who kindly brought it to my notice by the communication of a male specimen. Those which I lately received from France under this name were the ordinary D. carpophaga. The one which I represented at fig. 462, from a specimen belonging to M. von Frivaldszky, is scarcely to be distinguished from the pale specimens of this species, as they so commonly occur in the South of England. Guenée's description applies pretty well to this Irish specimen, only it is not larger than the ordinary D. carpophaga, but much more blackish, with pure white and deep black mixed; white scales prevail on the thorax, around both stigmata, and in the sharp apices towards the base of the wing, also in the dots on the cilia at the ends of the ribs; the posterior double line is more parallel with the hind margin, whence the middle field is distinctly broader, with a pale blotch between the hinder margin and the very black claviform stigma.

6. Tapinostola Bondii, *Knaggs.*

A good new species, discovered by Dr. Knaggs, in August, 1859, on the coast of Kent, and named by that entomologist. Larger than Nonagria fulva and N. concolor of Guenée (? extrema, *H.*, female), resembling the latter in colour, and differing from both in form. The body appears to me comparatively more slender, the antennæ of the male somewhat thinner than in either; the fore wings are much broader than in N. fulva, but longer than in N. concolor; the oblique direction of the hind margin is intermediate between the two; the coloration is whiter than in N. concolor—in the male throughout uniformly irrorated brown-gray, in the female only towards the strikingly whiter unspotted cilia; the row of dots the same as in N. concolor. In the male the hind wings are entirely irrorated with black-gray, somewhat darker near the hind margin; in the female the black-gray scales are more confined to a curved line behind the middle and at the hind margin. The fore wings are black-gray beneath, paler near the hind margin and near the costa; the hind wings are much whiter, the curved dark line being distinct in the male only. The legs are clothed with more blackish scales.

7. Nonagria concolor, *Guenée.*

I must here take the opportunity of making some observations respecting the above-mentioned Nonagria concolor of Guenée. It is briefly, but pretty distinctly, described by Guenée (1852), No. 158. In English works it first appears in 1850, as N. extrema, in the 'List of the Specimens of British Animals,' with the reference H. fig. 412: from this it appears that Mr. Stephens, the compiler of this List, had no doubt of its identity; he probably had similar specimens before him. I must, however, confess that the few specimens of this species which I have seen, and also those which I have represented at fig. 337 in my systematic work, differ too essentially from Hübner's figure to warrant the retention of that author's name, and the less so that I have myself in the above-mentioned work, page 228, vol. ii., under the name of N. extrema, which at most can be given to the female, quoted a male, which indeed unquestionably belongs to N. Hellmanni.

8. Lithosia molybdeola, *Doubleday in litt.*

Occurring in the North of England, in boggy moors; hence Mr. Doubleday supposes the larvæ feed on the lichens growing amongst the heather. It comes very near L. complana, but has somewhat narrower wings; the costal border of the fore wings is straighter, less convex and somewhat more narrowly yellow; the hind wings are plumbeous from the costal border to the middle, even almost as far as the inner margin, narrowly slightly yellow near the base, more broadly so near the hind margin. This plumbeous colour of the hind wings is on the upper side but little paler than that of the fore wings, on the under side not at all paler, and occupies two-thirds of the length of the wing from the base; in the female, with which I am not acquainted, it should be entirely gray. The legs are more strongly irrorated with fuscous. This is scarcely more than a local variety of L. complana.

9. Lithosia pygmæola, *Doubleday.*

Specimens sent by English entomologists as Lithosia pygmæola, and more recently by Mr. Doubleday as L. vitellina, can hardly be distinguished from L. pallifrons of Zeller. The size and form are the same, but the colouring much more uniform, hardly yellow, more yellowish gray, more decidedly paler towards the costa, more decidedly yellow on the hind wings, blacker towards the costa to the same extent as in L. pallifrons, black-gray on the under side as far as the anal angle, the cilia whiter by contrast. The female is entirely grayish above, only the costal line being whitish yellow. L. luteola appears not to occur in England.

10. Lithosia stramineola, *Doubleday.*

This species was first cited by Stephens, page 95, as L. flava of Fabricius; the latter author has it in his 'Supplement,' p. 461, from Italy, and says, "Media quasi inter *convolutam* et *luteam*, magnitudo et longitudo prioris, at color posterioris." As the former is Chilo gigantellus, and the latter Lithosia luteola, the comparison but ill applies to our species, and Doubleday's name is rightly cited. Stephens's description agrees. The statement of the size—namely, 1″ 4—6‴—is especially distinctive, thus considerably larger than L. aureola and L. helvola. Guenée seems to pronounce it a variety of L. griseola; it of course approaches it very nearly in form: it is, however, still larger; the wings are broader, the costa of the fore wing not quite so convex, its hind margin longer, straighter and more vertical; the colour is quite that of L. aureola, a uniform pale yellow, a little paler on the hind wings, a faint approach to grayish on the under side of the fore wings to the same extent as in that species.

11. Eupithecia subciliata, *Guenée.*

Is certainly E. inturbata, *H.*, *H.-S.*, as appears from a specimen sent to me by Mr. Doubleday, and not E. laqueata, as I formerly supposed.

Herrich-Schaffer.

[It seems desirable to add that a few alterations from the German have been intentionally made; for instance:—

Under Agrotis lucernea the word *southern* is substituted for *northern.*

Under Tapinostola Bondii, for *named by Mr. Doubleday* is substituted *named by Dr. Knaggs.*

Under Lithosia molybdeola, *where for miles no tree or shrub is to be seen* is omitted, as not strictly in accordance with fact.—*Edward Newman.*]

Occurrence of Chœrocampa Celerio at Brighton.—On the 29th of October last a beautiful female specimen of Chœrocampa Celerio was found by one of my servants resting on a wall by one of the windows of this house. From its condition I think that it could not long have emerged from the chrysalis. I have now in my cabinet specimens of Deilephila Galii, D. Lineata, Chœrocampa Celerio and C. Nerii, besides the commoner species, all taken within two hundred yards of this house. Probably the town lights are very attractive to all the tribe.—*John N. Winter; 28, Montpellier Road, Brighton, November 3, 1862.*

Description of the Larva of Demas Coryli. It falls off its food with a slight touch of the beating stick, but neither rolls in a ring nor feigns death. Head rather large, about the same width as the body, shining: body obese, the divisions of the segments strongly marked; the anterior part of the third segment bears two distant brushes of orange-coloured hairs directed forwards; the 5th, 6th and 12th segments bear each one brush of the same colour on the median line of the back, but in every instance the brush springs from two closely approximate warts. Head and ground-colour of the body pale red or dingy flesh-colour, in some specimens very pale, and in one example I have before me delicately white; there is a rather broad median line of the back perfectly black; this is interrupted on the 2nd, 3rd and 4th segments, and ceases on the 12th; on the sides are numerous black markings, different in different specimens, but these markings constitute conspicuous patches on the sides of the 2nd, 3rd and 4th segments; there is a yellow or white mark on the sides of all the segments, except the 5th; these marks are situated before and beneath the spiracles: the legs and claspers are pale, and each is surrounded by a black ring: the belly is variegated with black and orange, black predominating: each segment of the body has eight warts, and each wart emits a radiating fascicle of paler hairs, the central hair being generally twice the length of the others and of a silky character. The egg is laid in May, hatched in June or July, and the larva is full fed in September; it spins among the leaves a slight cocoon in which the hairs of the body are interspersed with the silk; the pupa is hairy. It remains in the pupa state throughout the winter, the perfect insect appearing in May. It feeds on Carpinus Betulus (hornbeam) and Fagus sylvaticus (beech). For this larva I am indebted to Mr. Wright, who beat several full fed specimens off the hornbeam in Epping Forest, on the 18th of September last.—*Edward Newman.*

Description of the Larva of Lobophora sexalisata.—Rests in a nearly straight posture, generally stretched at full length on the midrib of the leaf of its food-plant, the head being tucked in and the mouth concealed between the first pair of legs. It does not fall from its food or feign death on being disturbed. The head is rather narrower than the body, and distinctly divided into two rounded lobes on the crown: body uniformly cylindrical, without excrescences, but a good deal wrinkled, the 13th segment terminating in two divaricating points directed backwards. Colour of the head opaque yellow-green, of the body apple-green, with three indistinct whitish stripes down the back; the tips of the anal points are pink. Feeds on Salix capræa (sallow), and is full fed about the middle of September, when it spins a slight oval cocoon among fallen leaves. The pupa is short, smooth, chestnut-brown and shining; it remains in that state throughout the winter, the perfect insect appearing in May. I am indebted to Mr. Doubleday, who received his specimens from Mr. Robinson of Cockermouth, for the opportunity of describing this larva.—*Id.*

Capture of Æthia emortualis; Correction of an Error.—It may prove interesting to the London Macro-Lepidopterists to know that the insect captured by me in Epping Forest on the 12th of June, 1859, and announced in the 'Intelligencer' (vii. 188), and the 'Entomologist's Annual' for 1861, (p. 101), as Herminia derivalis, was not that species but Æthia emortualis. The specimen was exhibited at the Entomological Society on the 2nd of December, 1861.—*Charles Healy; 74, Napier Street, Hoxton, N.*

Lepidopterous Captures in the Isle of Wight.—I know not how other collectors have succeeded this season, but I have found it one of the worst I ever knew. Some insects that are generally common have not appeared, others generally considered scarce have appeared in great numbers. The following are the only captures I have made worth naming. In June I took a specimen of Laphygma exigua, very much worn, and in July I took three specimens of Triphæna subsequa; and last night, though blowing a gale of wind and raining in torrents, I took a beautiful specimen of Leucania vitellina. I took one three years ago, in the month of August, which is in Mr. Bond's collection. There were more insects at sugar last night than I have seen any night since July, and it is rather singular that five years ago, on the 20th of October, I took more good insects than I have taken since on any single night. Then it poured with rain, and so it did last night. This shows the necessity for working in all weathers, for it often happens that on the nights we think best there is not an insect to be seen, and yet on a fearful night like last insects were swarming at sugar.—*Henry Rogers; Freshwater, Isle of Wight, October* 22, 1862.

Notes on the Food and Economy of certain British Micro-Lepidoptera. By Mr. CHARLES HEALY.

1. *Renewed Observations on the Carnivorous Propensity and Economy of the Larva of Diplodoma marginepunctella.*

WISHING to observe the carnivorous propensity of this larva more closely, last June I searched for, and was fortunate enough to meet with, the larvæ in abundance: I found the males and females, and the larvæ in various stages of growth, all on the same fence at one and the same time.

My experience teaches me that, if well supplied with insects, the larvæ of this species evince no immediate desire to partake of whitethorn leaves; for example, on the 8th of June I put several larvæ into a jar along with an old case of the same species, one Plutella xylostella, one Adela Degeerella, one Tortrix viridana, and a leaf of whitethorn; on the 9th they had eaten all the particles of dead insects affixed to the old case; on the 11th the body of P. xylostella had disappeared; on the 14th the body of A. Degeerella had been devoured; on the 15th I observed them feeding on the body of T. viridana; at this date I put into the jar two specimens of Arctia Menthastri; on the 10th the body of T. viridana was entirely gone, and I observed they were all engaged eating the bodies of the two A. Menthastri; on the 21st I observed they had eaten the whitethorn for the first time; from that date up to the present I have continued to supply them with insects, only occasionally giving them a leaf of whitethorn.

This case-bearing larva is not affected by being kept in a glass-covered jar like a Coleophora larva would be.

I have been much struck with another circumstance relative to these exceedingly interesting larvæ, namely, after they have fed for a few days, they climb up the jar and suspend themselves for days and even weeks without partaking of a single particle of food. I am strongly of opinion that the economy of this species is similar to that of Talæporia pseudo-bombycella,—the female having deposited her eggs and covered them with down, that the young larvæ use the aforesaid down in constructing their first case. I observed a female laying eggs on my setting-board; she first laid an egg and afterwards covered it with down; then another egg, which she likewise covered; and so on, till she had deposited all her eggs: these eggs I put on one side for further observations, but unfortunately they were swept away and lost, and consequently I am unable to speak with certainty as to whether the young larva appropriates the down in constructing its case.

I annex a list of the insects whose bodies have been eaten by these larvæ since they have been in my possession:—Pygæra bucephala (1), Arctia lubricipeda (4), A. Menthastri (2), Bombyx neustria (1), Platypteryx unguicula (1), Xylophasia lithoxylea (2), Aplecta tincta (1), Ephippiphora fœneana (1), Tortrix viridana (4), T. adjunctana (1), Adela Degeerella (1), Yponomeuta evonymellus (3), Plutella xylostella (1), and Musca Cæsar (2).

2. *Renewed Observations on the Carnivorous Propensity of the Larva of Talæporia pseudo-bombycella.*

In May, 1860, I sent you an account of the carnivorous propensity of this larva. On the present occasion I purpose giving you a short account of my renewed observations on its carnivorous habits. Desirous of testing their carnivorous habits more fully, I collected several larvæ and placed them in a jam-pot, and fed them entirely on dead insects.

The following is a list of the insects whose bodies have been eaten by these larvæ at the present time:—"Eupithecia coronata (2), Tortrix rosana (1), T. corylana (1), T. unifasciana (1), T. viridana (1), Scardia cloacella (1), and portions of the bodies of two Tipula hortorum.

Some of these larvæ are now leisurely feeding on the bodies of some Yponomeuta evonymellus. At the end of June I brought home three fresh larvæ, and put them into the jug containing the larvæ of Diplodoma marginepunctella, along with which larvæ they fed, to all appearance in perfect harmony, during the months of July and August. I never observed them feeding on anything else than the bodies of the insects in the jar.

3. *Economy of Psyche roboricolella.*

The eggs of this species are laid inside the case, covered with down, and when the larvæ are born they envelop their bodies in the same. This is an old observation, made in 1860, since which time I have been unable to meet with the larva again, in order to fully test its carnivorous habits.

4. *Economy of Xysmatodoma melanella.*

The female of this species lays her eggs inside her case. The eggs are covered with down, and the young larvæ appropriate the same in fabricating their cases.

I have not yet observed this larva to have a carnivorous taste.

5. *A Suggestion as to the probable Food of the Larva of Micropteryx calthella.*

Determined, if possible, to discover this larva, early last May I visited Bishop's Wood, Hampstead. I observed the imagos in abundance, as usual, on the buttercup flowers, and, after a careful search, failed to meet with them on any other plant. Having sketched out a rough plan, showing the various spots where the imagos were abundant, I revisited the plants every week, and searched the leaves for the existence of a mining larva without success until the 21st of June, when I found a larva making a large mine in the leaf; this, however, was considered to be a sawfly larva. I resumed my search, but not meeting with a larva making *linear* excrement in the buttercup leaves, I commenced searching the leaves of the birches growing over the aforesaid buttercups, and, after hunting over a whole host of leaves mined by coleopterous and dipterous larvæ, I found some true Micropteryx larvæ. I continued searching the buttercups and neighbouring plants up to the end of July, without finding any trace of a Micropteryx larva. I therefore point to the birch as the probable food of this larva.

6. *A Suggestion as to the probable Food of the Larva of Micropteryx Seppella.*

In June, 1861, I observed this species swarming in a little lane near Addington. Being desirous of finding the larva, I sat down on the bank and endeavoured to discover a preference on their part for any particular plant; but, after spending some time watching their movements, all that I observed was that they fluttered over and settled on the grass stems. On the 25th of the following month I revisited the locality, and eagerly searched amongst the low plants for evidence of a Micropteryx mine, but without success. Failing amongst the low plants, I ran my eye over the various privet, hazel and oak bushes, and whilst doing so I observed a small birch, nearly buried by the surrounding bushes, every leaf of which, on closer acquaintance, I found had been tenanted by a Micropteryx larva. Lower down the lane I observed another small birch, in the leaves of which I found two larvæ. Body faint green; head light brown; the 2nd, 3rd, 4th, 5th and 6th segments having each a small black spot, diminishing in size. All the other larvæ had vacated their mines. From the previous abundance of the perfect insect in this locality, and the total absence of a Micropteryx mine in everything but birch, I am inclined to think that the birch will prove to be the food of this larva.

7. *A Scented Micropteryx Larva.*

Whilst collecting birch-feeding Micropteryx larvæ, during the last two seasons, my attention has been drawn to the circumstance of one of the larvæ having a musky scent attached to it. The larva is of a very dark gray colour.

When I first noticed the scent I considered it arose from the leaves, but last May I found the larva feeding in company with a white Micropteryx larva, which was quite scentless, whilst the dark brown larva retained its peculiar faint musky smell.

8. *Micropteryx Larvæ infested by a Dipterous Larva.*

Last May, whilst engaged sorting the empty leaves from the tenanted, I observed several Micropteryx larvæ remaining motionless in their mines. Having allowed an interval of two or three days to elapse, and finding they were still in the same position, I ejected them from their mines, and found they were dead. From the appearance of the larvæ I was induced to open them, when the cause of their death became apparent by finding that each larva had a dipterous-looking larva feeding on its intestines.

CHARLES HEALY.

74, Napier Street, Hoxton, W.

Capture of two Coleopterous Insects new to Britain.—I have recently taken and determined two insects, which have not hitherto been recorded as British:—

1. Aphodius Zenkeri, *Erich.* It is in general appearance more like A. Porcus than any other British species. Short, ovate, convex, chesnut-brown. Head black, with pale margins to clypeus, which has three tubercles, the central one prominent in the male, and distinctly angulate in front of the eye. Thorax with disk dark, thickly punctate; anterior and lateral margins chesnut-brown. Elytra with obscure dark maculations, a large oblique patch on each behind the middle; the striæ punctate, and the interspaces elevated and smooth, with their margins punctate, giving the appearance of compound striation; basal joint of posterior tarsi elongate. Length about 2 lines. I took about thirty specimens in human excrement, at Mickleham, in August, 1862.

2. Tachyusa coarctata, *Erich.* Nearly allied to T. constricta, the abdomen being constricted at the base, but not quite to the same extent. It is smaller, polished, with a fine gray pubescence, and my specimens are entirely black, with a bluish tinge like that of T. leucopa, with the exception of the mouth and tarsi, which are testaceous-yellow. The tibiæ are darker than the tarsi, but paler than the rest of the body.

The abdomen is more polished than other parts. Length about 1⅜ line. I took two specimens on the banks of the Mole, in August, 1862, in company with T. constricta and T. umbratica, the latter of which was also new to the British Fauna, until it was taken and determined by Mr. Janson, previously to my capture of it, first at Haliford, and afterwards near Mickleham.

I have also taken another Tachyusa, undoubtedly new, and an Oxypoda from nest of Formica fuliginosa, both at Mickleham, but have as yet been unable to determine them.—*John A. Power; 52, Burton Crescent, October* 17, 1832.

Occurrence of Gymnusa brevicollis in Scotland.—This species, which Stephens, in his 'Manual,' declares to have been improperly recorded as British, is now represented, I believe, in some cabinets by undoubted English specimens. The insect occurs in Scotland also, two specimens having been taken by me in a wet bog in Berwickshire, in August last, along with a pair of Myrmedonia collaris.—*Robert Hislop; Blair Lodge, Falkirk, October* 20, 1862.

Rare Scottish Coleoptera.—A few other noteworthy species were picked up during my visit to the Border. Boletobius inclinans and Quedius fulvicollis were found among moss in a fir wood, along with Mycetoporus clavicornis. M. splendidus and Q. ruficollis accompanied. On the summit of Dirrington Law, which is only 1145 feet above the level of the sea, I met with a lovely specimen of Leistus montanus. Hydnobius strigosus and Miscodera arctica were found on the same level. Lower down Tarus Vaporariorum and Bradycellus collaris (harpalinus?) were met with. I may add that B. inclinans was taken by me for the first time in March last in this neighbourhood, fifty miles to the west of the former locality. An interesting addition has been made to our Scottish list by my young friend Mr. Charles Millingen, who took Claviger foveolatus near Neidpath Castle, in its usual ants' nest.—*Id.*

Coleoptera in the New Forest.—Having recently had an opportunity of examining the insects captured by Mr. Farren in the New Forest, I am enabled to add the following to the list given in the 'Zoologist' for August (Zool. 8141):—

Liodes humeralis. Common in Fungi on trees.

L. axillaris. Three or four specimens are distinctly referable to this species, having slightly dilated anterior tarsi and simple posterior femora in the male.

L. orbicularis. Not rare, with L. humeralis.

Agathidium seminulum and A. rotundatum are apparently the only ones found here.

Paromalus parallelopipedus. I have seen a specimen of this in the Rev. A. Matthews' rich collection, and have obtained three specimens from the New Forest under bark.

Rhizophagus parallelocollis and R. cæruleus. One specimen of each, and a few abnormally small specimens of R. ferrugineus that might pass for R. parvulus, *Payk.*

Microrhagus pygmæus. A magnificent female under bark; the largest specimen I ever saw.

Athous rhombeus. Two fine specimens; one bred from the larva.

Elater lythropterus and E. Pomonæ. In tolerable numbers; also a few specimens of E. elongatulus. All the E. bipustulatus belonged to the supposed variety, whereas at Andover this never occurs.

Tetratoma Desmarestii. From Fungi.

Melandrya canaliculata. One specimen, in company with numbers of the common M. caraboides, under bark.

Conopalpus testaceus. A few specimens from whitethorn.

Cryptocephalus bipustulatus. The habits of this species certainly do not tend to unite to C. lineola, though in form and sculpture it would be hard to find much difference.

Sundry genera remain as yet unexamined; *e.g.* Cerylon, of which I cannot but consider that we have more than two species; the red specimens that I have obtained are almost all identical with specimens of C. deplanatum, *Gyll.*, that I have received from the Continent, but I have two that resemble the C. angustatum, *Er.*—*G. R. Crotch; Weston-super-Mare.*

Life-Histories of Sawflies. Translated from the Dutch of M. SNELLEN VAN VOLLENHOVEN, by J. W. MAY, Esq.

(Continued from p. 8178.)

LOPHYRUS SIMILIS, *Hart.* *Hartig, Fortsliches Convers.-Lexicon,* 2nd ed. p. 987; *Blatt und Holzwespen,* p. 160, No. 10. *Ratzeburg, Die Forst-Insecten,* vol. iii. p. 116, No. 25, tab. ii. fig. 3. *Snellen van Vollenhoven, Schadelijke Insecten,* p. 58.

Lophyrus ♂ niger, punctatus, labro palpisque brunneis, antennis thoracis longitudine, pedum genubus, tibiis tarsisque pallide rufo-flavis; ♀ sordide flavus, capite, maculis tribus dorsalibus thoracis et macula magna irregulari in abdominis dorso nigricantibus, antennarum parte externa cærulescenti nigra.

If any sawfly is aptly named it is the species we are now about to treat of, for, having regard to this insect in its perfect state, it is extremely difficult to distinguish it from the imago of Lophyrus Pini described at page 7887. Although there are some general characters by which the species may be distinguished, they are still so nearly alike that the separation of individual specimens is very difficult. On the other hand, the larvæ are so differently coloured that there is no danger of confounding the two species in that state. To any one not acquainted with these facts from a study of the works cited above, and who, having first reared one of these species, is afterwards watching for the appearance of the imago out of the cocoons of the other, it is somewhat surprising to get an insect the male and female of which differ greatly from each other, but are both respectively precisely like a species which he had reared from entirely different larvæ.

The observer is naturally impelled to conclude there must be some mistake in his observations.

I first found the larvæ at a country seat near Rotterdam, on the Weymouth pine (*Pinus Strobus*); the trees had a sickly appearance, arising probably from the fact that they were growing in an uncongenial soil. From their variegated colours the larvæ were very conspicuous, so much so that many persons called my attention to them. It was with some of these larvæ that I there made the observations which I alluded to in my description of Lophyrus Pini. I left the larvæ quite at liberty, and allowed them to pupize as they pleased. Some spun oval cocoons upon the branches of the trees on which they had lived; others descended from the tree, and spun up at its foot among the roots and the surrounding moss; these cocoons were paler or more of a gray tint than the others. I collected both in separate boxes. From the first cocoons, namely, those attached to the branches, I got nothing but a species of Pteromalinus; while the others, which I had found at the roots, produced perfect sawflies, only here and there one containing a dried-up larva. Can it be that the circumstance of a sawfly larva being infested with parasites renders it so weak or so sluggish that it is unable to get through the journey along the branches and down the stem of the tree? If so, why does it not simply let itself fall from the branches? I am unable myself to reply to these questions. I must also state that I have had no opportunity of repeating this observation, and therefore it may be that the whole matter is nothing but a chance coincidence which may never be observed again. The larvæ have been once taken by Dr. M. C. Verloren at Driebergen, and several times by Dr. J. Wttewaal at Voorst; this gentleman sent me the specimens from which the figs. 1, 2 and 2*a*, plate 8, were drawn. On comparing this plate with the 11th of the first volume, one sees at once the great difference between the larvæ of these so nearly allied species. It must be remarked that the larva of Lophyrus Pini is of a darker shade and more variegated with spots than as represented in the said plate, but the bright yellow and dark blue, which are such conspicuous colours in the larva of L. similis, are not found in that of L. Pini. I have a drawing, made since the publication of vol. i., of a larva which I did not take to be that of L. Pini, but which has nevertheless produced that species: I shall perhaps be able to give this figure on some future occasion.

The larva of L. similis attains a length of 3 centimetres, and a circumference of nearly 15 millimetres. Head bright shining black, round, depressed, not elliptical. The six corneous thoracic legs are black; the skin at the joints is softer and pale-coloured, so that the legs appear to be ringed. The general colour of the skin is a very dark blue, or even a bluish black variegated with yellow and pale blue. There is a narrow pale blue stripe down the middle of the back; this is best shown at figure 1. At some distance on either side is a yellow stripe, which appears to be made up of spots placed close together; the rest of the space, as far as the spiracles, is beset with small round and elliptical pale blue and yellow spots. The legs are pale blue, with a quadrate black spot at the base and outer surface; above the legs are some rather large oval spots placed lengthwise. The first segment, or what might be called the neck, is almost wholly yellow.

The position of all these markings can be more readily made out from the enlarged drawing of the seventh and eighth segments given at fig. 2*a*. From this it can be seen that the skin of each segment is divided on the dorsal surface into six folds of unequal dimensions, and that the two yellow dorsal stripes are composed of spots divided from each other by the black epidermis lying between the folds. The first two spots on the folds, or rather to say, dermal eminences, are of equal length, but the first is a little broader, the third is of the same breadth as the second, but prolonged a little further down the side; these three are yellow. Then follow two smaller pale blue spots on narrower folds, and lastly a large yellow spot on a second eminence.

It is not worth while to give a detailed description of the size, shape and position of the other spots and dots, as these will be more readily made out from the figure. We must, however, point out that the first, third and sixth dermal folds are beset with spines, as is the case with L. Pini, only in the latter they are black and in this insect yellow.

There are sixteen abdominal claspers in all. The posterior termination of the body is almost always kept bent round towards the abdominal claspers. When the larvæ are touched they throw the head and fore part of the body violently backwards, and then hold on by only four or five pairs of claspers. When left at rest they assume the position represented in the plate.

It is worthy of remark that while Hartig and Ratzeburg both assert that L. similis has the same habits as L. Pini, and the first-named author distinctly states that he met with his examples in the larva state on Kufern-Stangenhölzern, with us the larvæ have never been observed but on the Weymouth pine (*Pinus Strobus*). Further, Dr. Wttewaal informs me that he found fully grown larvæ on the 24th of June, 1856, the 25th of June, 1857, and the 15th of September, 1858, always on Pinus Strobus, and those which I found at Rotterdam inhabited the same species of tree. I have no record of the species of pine on which Dr. Verloren met with his larvæ; it was probably not communicated to me. From the fact of the larvæ making their appearance in the months of June and September it clearly appears that there are two generations in the year. The usual course is this: the individuals which spin their cocoons about the 1st of October come out in April or May, pair, and deposit their eggs from which larvæ are produced, spinning up about the 1st of July; imagos appear about the end of that month, whose larvæ pass the winter in the cocoon. Meanwhile I must here observe that two larvæ which had spun up on the 1st of October, 1858, had not assumed the pupa state on the 29th of May, 1859. It is thus very possible that in some years this species produces but one generation, the same as L. Pini. This insect cannot be said to be destructive to our Weymouth pine trees, it having only occurred in the Netherlands sporadically and in small numbers.

The cocoon of this sawfly, as represented at fig. 3, is of precisely the same shape as that of L. Pini; it is also equally hard and pergamentaceous, but it differs in colour. The cocoons of L. Pini run through a number of tints intermediate between brown and silverygray, those of the present species range from obscure brown to dull yellow, no gray-coloured cocoon being observed. As before stated, the cocoons are found both on the branches and in the moss on the ground. Dr. Wttewaal writes, "The cocoons are attached lengthwise to the branches and also in the angles, this latter position being the most frequent," and makes no mention of their occurrence at the roots, which he thus appears not to have observed. Neither Hartig nor Ratzeburg gives any information as to the place in which the cocoons were found.

The imago liberates itself by gnawing out a little lid in the same manner as already described in the case of the other species. I have never been able to observe the pupa; I have either opened the cocoons too soon or waited too long, as in the case of those I took at Rotterdam.

It will be unnecessary to give a particular description of the imago of this species, as was done in the case of the common pine sawfly. It will suffice if we explain the points of difference between the two. It must here, however, be observed that the distinctive characters are not always to be clearly made out, and that varieties of the two species approach each other so nearly that all differences disappear, and the species are no longer to be distinguished.

Most males of L. similis differ from those of L. Pini in the following particulars. In the head the whole of the upper lip and the palpi to the base are reddish brown. The antennæ are longer, being nearly as long as the head and thorax, and have from twenty to twenty-two pectinations. In the case of this species also the teeth on the outside are much longer than those on the inside, as is clearly shown in fig. 4 *a*, which represents two joints of an antenna, each having a process on either side, and showing very plainly that the left hand process, which is the outer one, is much longer than the right hand or inner one. The tegulæ are usually more clearly rufo-testaceous than in L. Pini. In the abdomen the white spots on the pointed prolongation of the dorsum of the first segment are wanting; on the other hand the under side of the abdomen is of a general reddish tint, and the horny plate above the organs of generation is distinctly red. The legs offer no points of difference either in colour or shape. We must here state that Ratzeburg very plainly intimates that there is a difference in the neuration of the wings which he considers to be constant. It does not, however, appear that this distinction is always equally observable in Netherland examples of the insect. We prefer giving this characteristic difference in his own words.

"Bei T. similis werden nemlich oft 2 Zellen fast volständig getrennt, dadurch dass dem ungewöhnlich langen Scheidenerven gegenüber der hornige Anfang der 2ten Hälfte liegt und dass beide durch einen hellen Nerven verbunden werden, an welchem man entweder bloss die beiden Ränder oder zwischen diesen auch eine Körnige Ausfüllung bemerkt. Nur 2 meiner Stücke zeigen dies undeutlitch; bei T. Pini finde ich aber nicht an einem einzigen Exemplare jene Verbindung deutlich, ja es kommen Exemplare vor, an welchen der Scheidenerv fast ganz fehlt. Ist bei T. Pini einmal eine weisliche Fortsetzung der Scheidenerven deutlich, so ist sie immer mehr gegen den Vorderrand gerichtet und würde, wenn sie vollständig wäre, eine fast ovale erste Zelle einschliessen, während bei T. similis die Scheidenervenfortsetzung immer vom Randnerven abwärts strebt, meist sogar etwas bogenförmig und dadurch eine abgerundet-viereckige Zelle bildet: der innere Nerv dieser Zelle beträgt die Hälfte des ganzen Scheidenerven, oder noch mehr, während er bei T. Pini viel kürzer ist, als die Hälfte."

Against this we have Hartig's statement, who first described this species, and has carefully compared it with the so nearly allied L. Pini, and who simply says, "In der Flügel-Bildung und Farbung findet kein Unterschied zwischen diesem und dem männlichen L. Pini statt."

And now as to the female, the following will be found to be the distinctive characteristics of the two species. The head is generally speaking darker, and not only brown but brownish black, without any paler spots below the eyes or above the trophi. The antennæ also are darker, bluish black even, with the exception of the two basal joints, which have a yellow tint; the antennæ are also somewhat thicker in the middle and at the end. The breast of the thorax has almost always a black shining spot; the scutellum is almost entirely yellow. The legs are of a more obscure yellow, that is to say a yellow mixed with gray or brown, the extremities being of a somewhat darker reddish brown.

The saw and ovipositor (fig. 6) are nearly the same as in the female of L. Pini; only it appeared to me that the teeth of the saw in this species were generally smaller.

I am not aware of the appearance of the egg nor of the place in which it is deposited; it is probably laid in a slit in a pine leaf, as in the case of the allied species.

This species is observed in Germany and the Netherlands. There is no reason for supposing it may not be found in other contiguous European countries or in countries having the same mean temperature, although I am not acquainted with any record of its appearance there. Dahlbom and Lepeletier make no mention of this species.

In May, 1856, and April, 1857, two ichneumons appeared from cocoons of this insect which my friend Wttewaal had in his house, that on the latter date being Tryphon marginatorius, *F.* (Grav. Ichn. ii. p. 191), and that on the former date a species of Tryphon, which appears to me to be undescribed. Hartig does not mention that he reared any parasitic Hymenoptera from the cocoons, but says that some maggots made their appearance which afterwards produced Tachina bimaculata. Ratzeburg, however, in his 'Wirths-System,' gives the names of three species of ichneumon which had lived in the larvæ of Lophyrus similis, namely, Campoplex argentatus, a very common species in various sawfly larvæ, Entodon canaliculatus and Torymus minor. I have had no opportunity of determining which species of Pteromalinus I obtained from the larvæ which I first found (1837 or 1838).

List of Phryganidæ taken in 1862. By PERCY C. WORMALD, Esq.

THE following is a list of the Trichoptera which I have captured (with few exceptions) during the present year. I did not meet with a single species till the 1st of May, when I took two, Limnephilus costalis and L. fumigatus, though there is one species, Brachycentrus subnubilus, *Curt.*, which appears in April, and has been taken in Devon by Mr. Parfitt. It is said to occur near London, but my search for it was unsuccessful. During a short visit to North Wales I captured a Rhyacophila new to Science, which has been named R. obliterata by Mr. M'Lachlan.

Phryganea grandis, *L.* Common on palings at West End, Hampstead, end of May and beginning of June.

P. striata, *L.* One specimen near Hampstead, May 18.

Colpotaulius incisus, *Curt.* Common at Hammersmith Marshes, June 28.

Limnephilus pellucidus, *Oliv.* Hampstead, Hendon and Ruislip (Middlesex), West Wickham and Epping Forest; appears throughout the summer; first seen May 19, last seen September 13.

L. vitratus, *De G.* Kilburn, Kew, Ruislip and Bala Lake (N. Wales), middle of June to October.

L. rhombicus, *L.* Canal near Willesden (Middlesex), from middle of June to beginning of September.

L. marmoratus, *Curt.* Kew and Ruislip, August; common at the former locality.

L. flavicornis, *Fab.* One specimen near Hampstead, June 7; common at Ruislip in August and September.

L. stigma, *Curt.* One specimen, June 26, at Ruislip; common in August and September at the same place.

L. bipunctatus, *Curt.*? One specimen near Hendon (Middlesex), June 22. This appears to be rather a scarce species.

L. auricula, *Curt.* Near Hampstead, Coombe Wood, Epping Forest and Ruislip; also at Llangollen and Bala (North Wales); end of May to end of August.

L. costalis, *Step.* A very common species, at the commencement of the season, in most woods, &c.; is out from the beginning of May to September.

L. vittatus, *Fab.* Ruislip and Epping Forest, end of June to end of September; common.

L. centralis. Hampstead and Epping Forest, June and August; not common.

L. irroratus, *Steph.* (hirsutus, *Kol.* non *Pict.*) Canal at Willesden, beginning of May to end of July. I have not as yet met with this species anywhere else, but it is very abundant there in June.

L. hirsutus, *Pict.* Two specimens on thistles after dark, in July, 1861. Received three specimens from Mr. Corbin, of Ringwood, this year.

L. sparsus, *Curt.* Ruislip, Epping Forest, Llangollen and Bala (N. Wales), August.

L. fumigatus, *Germ.* One specimen at Willesden, May 1.

Anabolia nervosa, *Leach.* Very common at Willesden, August to October.

Stenophylax hieroglyphicus, *Steph.*, *M'Lach.* Two specimens at Hampstead, May 18 and October 25.

S. stellatus, *Curt.* Six specimens at Bala Lake, August 18. Received a large female specimen from Ringwood; it is at least half as large again as those from Wales.

Halesus digitatus, *Schrk.* Common at Willesden, September and October.

H. flavipennis, *Pict.* Five specimens at Llangollen, August 17 and 22.

Sericostoma Spencii, *Kirby.* One specimen at Llangollen, August 22. Received one from Ringwood.

Goëra fuscicornis and G. capillata, *Pict.* Willesden and Kew, common; middle of May to August. I think Dr. Hagen is correct in his opinion that these two species of Pictet are synonymous. (Ent. Ann. 1859, p. 102).

Silo pallipes, *Fab.* Llangollen, common; August.

Mormonia hirta, *Fab.* Very common at Llangollen, Corwen and Bala (N. Wales), in August.

Odontocerus albicornis, *Scop.* Five specimens at Llangollen, August 22.

Molanna angustata, *Curt.* Willesden and Kingsbury, June to August; common.

Leptocerus fulvus, *Rbr.* I again met with this species at Ruislip Reservoir, middle of June to August.

L. cinereus, *Curt.* Banks of Thames and Bala Lake, very common; June to August.

L. annulatus, *Step.* Two specimens at Bala Lake, August 18.

L. aterrimus, *Step.* Willesden, &c., common; May and June.

L. dissimilis, *Step.* Banks of Thames at Kew, and Bala Lake, not common; August 9 and 18.

L. tineoides, *Step.* ? Two specimens—one at Kew, the other at Bala; June 21 and August 18.

L. bicolor, *Curt.* Willesden and Ruislip; very common at the latter locality in June.

L. albifrons, *L.* Kew, common, June to August; also at Bala Lake.

L. pilosus, *Müll.* Hyde Park and Ruislip, June to August.

Mystacides atra, *Pict.* Willesden, July and August.

M. nigra, *Pict.* Kew and Bala Lake, August; not common.

M. quadrifasciata, *Fab.* Hyde Park and Ruislip, June and July.

Setodes testacea, *Curt.* Ruislip, June to end of August.

Rhyacophila dorsalis, *Curt.* Llangollen, August.

R. obliterata, *M'Lach.* A new species, of which I took two male specimens at Llangollen (N. Wales), on the 22nd of August, 1862. I have two female specimens which may belong to this species, but I am unable to speak positively.

Glossosoma Boltoni, *Curt.* (fimbriata, *Step.*) Common at Llangollen, August.

Agapetus funereus, *Step.* ? Two specimens at Llangollen, August 18.

Polycentropus pulchellus, *Curt.* Common near Willesden, in May and June; taken also near Kew.

P. bimaculatus, *L.* Kingsbury and Willesden, July and August.

Philopotamus (?) occipitalis, *Pict.* (subaurata, *Step.*) Four specimens at Llangollen, August 22.

Tinodes pallescens, *Step.* Willesden, Kew, and Bala Lake, in August.

Psychomia annulicornis, *Pict.* Very abundant on the banks of the Thames near Kew, June to August.

Hydropsyche angustata, *Pict.* One specimen near Kew, August 9.

H. fulvipes, *Curt.* Willesden, Kingsbury and Kew, July and August.

H. Danubii, *Brauer*, Neurop. Aust. p. 40. There is at present a great deal of uncertainty as to the species of the genus Hydropsyche, but I think I am correct in recording this species as new to Britain. It is certainly not included in Dr. Hagen's 'Synopsis.' The following is a translation of Brauer's description: — "Lower appendices of the male dilated at the apex, yellow. Sheath-valves of the female divergent, strongly springing outwards. Upper appendices of the male closed, with a deep oval incision at the hind margin; last segment of the abdomen on the top narrow, black, raised. Sheath-valves of the female at the raised margin straight, cut short, brownish, covered with bristly hairs. Wings gray, speckled with pale yellow. Sides of the thorax entirely gray or streaked with yellow. Antennæ yellowish brown, ringed with black. Head and thorax clothed with yellowish hairs above. May." Exp. alar. of the male 10 lin. One male specimen was sent to me by Mr. G. B. Corbin, of Ringwood, Hants, at the commencement of the season.

H. atomaria, *Step.* Banks of the Thames near Kew, June.

In addition to the above I have a Limnephilus which is new to this country, and possibly entirely new.

Amongst the Neuroptera I have met with the following species:—

Libellula striolata, *Charp.* One specimen at Ruislip, August 27.

Calopteryx splendens, *Harris.* One specimen, Lewisham, June 4.

Agrion minium, *Harris.* Willesden and Ruislip, in June.

A. elegans, *Vand. Lind.*, and A. Puella, *L.* Common at almost all ponds, in June and July.

A. mercuriale, *Charp.* Willesden and Hampstead, May and June.

Chrysopa vulgaris, *Schw.* Twyford (Middlesex), October 11.

C. flava, *Scop.* Hampstead, Coombe Wood and Ruislip, June to August.

C. alba, *L.* West Wickham and Hampstead, May and June; common.

C. angustipennis, *Step.?* Three specimens at Hampstead, Ruislip and Coombe Wood, June and July.

C. tenella, *Schw.* Three specimens at Hampstead, June and July.

C. Perla, *L.* West Wickham and Hampstead, May and June.

Sisyra fuscata, *Fab.* Willesden, Kew and Bala, June to August.

S. terminalis, *Curt.* Banks of Thames near Kew, June 21.

Micromus paganus, *Vill.* Four specimens at Hampstead, Willesden and West Wickham, May and June.

Hemerobius micans, *Wesm.* West Wickham, Ruislip and Epping Forest, not common; May to August.

H. ochraceus, *Wesm.* Not included in Dr. Hagen's 'Synopsis.' Two specimens at West Wickham by beating firs, in May.

H. nervosus, *Fab.* Hampstead, &c., in August; common.

H. phaleratus, *Hoff.* Dartford Heath, in April; Coombe Wood, in July.

H. punctatus, *Goëze.* Not included in 'Synopsis.' One specimen at West Wickham, August 26, 1861.

Coniopteryx tineiformis, *Curt.* West Wickham and Hampstead, May (end) and June.

C. psociformis, *Curt.* Willesden, West Wickham and Coombe Woods, &c. Beginning of May, and June.

Sialis lutarius, *L.*, Panorpa communis, *L.*, and P. germanica, *L.* Common.

Psocus immunis, *Step.* West End, Hampstead, on palings, in July and August.

P. quadrimaculatus, *Step.* Hampstead, on palings; July and August.

P. subocellatus, *Step.* One specimen, Epping Forest, August 28.

P. immaculatus, *Step.* One specimen, Ruislip Wood, June 26.

P. phæopterus, *Step.* Two specimens on palings near Hampstead, July 19.

P. flaviceps, *Step.* Near Acton and Hampstead, July and August; on palings.

P. abdominalis, *Step.* One specimen on palings near Hampstead, July 19.

P. lineatus, *Latr.* One specimen near Llangollen, August 17.

P. nebulosus, *Step.* Two specimens at Llangollen and Epping Forest, in August.

P. variegatus, *Latr.* On palings near Hampstead, common in June.

H. bifasciatus, *Step.?* Three specimens on palings near Hampstead, August 2 and 3.

In addition to the above I have some half-dozen species of the Planipennes and Psocidæ not yet determined, besides a number of the Ephemeridæ and some Perlidæ.

PERCY C. WORMALD.

Kilburn, London, N.W.,
October 27, 1862.

Occurrence of Portuguese Men-of-War off the Isle of Wight. — On the 7th of August we had a most terrific gale, and for several days after our shores were lined with hundreds of Physalia, or Portuguese men-of-war, as I believe they are called in England: they were not only at the back of the island, but also on the south shore of the Solent. I picked up several, and had a great number brought to me to be named for different visitors: many of them were alive, and one lived for two days in a basin of salt water; it changed its shape continually, and reflected all the colours of the rainbow. I believe this is common on the shores of the Mediterranean, but only rarely captured on the British shores. — *Henry Rogers; Freshwater, Isle of Wight, October* 22, 1862.

E. NEWMAN, PRINTER, DEVONSHIRE STREET, BISHOPSGATE.

27 OC 79

Sirex Gigas an Enemy of the Hive Bee.—The following account of a curious fact connected with the habits of Sirex Gigas, communicated to me by my friend Miss Flora Jeston, of Henley-on-Thames, may not be uninteresting to your readers. She writes thus:—"One day about the last week in July we noticed an unusual commotion round the largest of the bee-hives of my friend Mr. Pennington. It had been for some time observed that very few bees were to be seen coming out, and he had wondered as to the cause, inasmuch as it was the strongest of the hives, and a supply of thirty pounds of honey had been left in November for the consumption of the bees during the winter. On the morning in question the hive was beset by hundreds of the Sirex Gigas, which were passing in and out, and the bees apparently engaged in trying to turn them out of the hive, from which they were issuing in great numbers. There was a battle of some hours, during which the bees killed many of their enemies. The Sirex, however, retained possession of the hive, and towards evening the last of the bees took their departure. The next morning every one of the Sirices had also disappeared. On examining the hive it was found nearly empty. No honey remained. The old comb was there, but there was no appearance of any new comb having been built during the summer. In fact nothing remained except some dead bees and Sirices, and a portion of old comb containing a little bee-bread." Miss Jeston gave me some of the insects in question. I presume that this was a foray of a Sirex army in search of honey or other food, and that they decamped when they had secured it. I never, however, before heard of the insect congregating in such numbers, but have generally seen only solitary individuals. I believe, too, that it is usually attached to the region of fir trees, and there is, if I am not mistaken, no fir plantation of any kind within a considerable distance of Henley. It is rather singular that a weak state of the hive should have been noticed where it was expected to be strong; but of course it is not to be supposed that the Sirices bred in the hive, after the fashion of Sitaris or Ripiphorus; for I believe their habit is to bore into fir trees to deposit their ova; and, moreover, remains of their pupæ, &c., could not have failed to be found and noticed.—*John A. Power; 52, Burton Crescent, October* 17, 1862.

T. LAST, NATURALIST, 43, Rope Walk, Ipswich, has the following **INSECTS** for sale, well set and in fine condition, captured by himself in Suffolk and Hertfordshire, at the following low prices:—

	s.	*d.*		*s.*	*d.*
C. Edusa, male	0	3	A. putris	0	2
H. Semele, male and female, each	0	2	X. hepatica	0	4
A. Paphia and A. Adippe, „	0	2	X. scolopacina	0	6
V. Polychloros	0	2	D. Pinastri	0	4
T. W-album	0	9	A. fibrosa	0	9
P. Ægon	0	2	R. tenebrosa	0	4
A. Trifolii	0	3	A. suffusa	0	2
S. Populi, bred	0	2	A. Segetum	0	2
S. apiformis (good and perfect)	0	6	N. glareosa	0	4
D. dodonæa, bred	1	9	N. plecta, bred	0	2
P. dictæa	0	6	N. rhomboidea	1	9
L. camelina	0	3	N. Dahlii	0	4
L. curtula, bred	0	9	A. herbida	0	3
P. monacha	0	6	B. Parthenias, male	0	4
D. falcataria, male	0	6	B. Notha, male	0	6
T. Batis	0	3	A. pyramidea	0	2
C. Or	0	6	E. punctaria	0	2
D. Orion	1	3	V. limbaria	0	3
L. straminea	1	9	E. pumilata	0	4
L. pudorina	1	0	S. certata	0	4
L. phragmitidis	0	4	C. obliquaria	0	4
N. despecta	0	4	R. sericealis	0	4
N. fulva	0	2	C. Phragmitellus	0	9
N. crassicornis	1	0			

T. LAST will be thankful to receive orders.

CONTENTS.

Notices of New Books. — 'On Unity of System,' 8265.

Birds. — On the Ornithology of Northern Japan, *Capt. Blakiston, R.A.*, 8270. Barn Owl preying upon Fish? Notes upon the Migration and Song of the Skylark, *H. L. Saxby, Esq.*, 8281. Thrush Singing in October, *Hugh Hornby, Esq.*, 8281. Occurrence of the Bluethroated Warbler at Brighton, *Henry Pratt, Esq.*, 8281. Corvus americanus—Corvus corone of Wilson, *Capt. Henry Hadfield*, 8282. The Cuckoo and the Gooseberry Grub, *Rev. H. Harpur Crewe, M.A.*, 8282. Abundance of Young Cuckoos at Deal; Occurrence of the Hoopoe at Deal, *H. J. Harding*, 8283. Occurrence of the Hoopoe and Spoonbill in Surrey, *W. Bridger, Esq.*, 8283. Occurrence of the Gray Phalarope in the Isle of Wight, *Henry Rogers*, 8283. The Sandpiper a Diver, *Rev. G. C. Green, M.A.*, 8283. Observations and Remarks on Scolopax gallinago and Corvus corone of Wilson, *Captain H. Hadfield*, 8284. Occurrence of the Knot in Lancashire in August, and its Eastern Range, *Captain Blakiston, R.A.*, 8287. Occurrence of the Manx Shearwater at Sheerness, *H. L. Saxby, Esq.*, 8287. Occurrence of the Pomarine Skua in the Isle of Wight, *Henry Rogers*, 8288.

Reptiles. — Coluber lævis identical with C. dumfrisiensis, *Edward Newman*, 8288. Coluber lævis not rare in Sweden, 8289. The Iguana not an Inhabitant of Tasmania, *Edward Blyth, Esq.*, 8289.

Fishes.—Capture of the Sword Fish on the Essex Coast, *C. Parsons, Esq.*, 8289.

Arachnida.—Lecture on Spiders, 8290.

Insects.—On some new or little-known Macro-Lepidoptera from England, *Dr. Herrich-Schäffer*, 8291. Occurrence of Chœrocampa Celerio at Brighton, *John N. Winter, Esq.*, 8295. Description of the Larva of Demas Coryli; Description of the Larva of Lobophora sexalisata, *Edward Newman*, 8295, 8296. Capture of Æthia emortualis; Correction of an Error, *Charles Healy*, 8296. Lepidopterous Captures in the Isle of Wight, *Henry Rogers*, 8296. Note on the Food and Economy of certain British Micro-Lepidoptera, *Charles Healy*, 8297. Capture of two Coleopterous Insects new to Britain, *John A. Power, M.D.*, 8300. Occurrence of Gymnusa brevicollis in Scotland; Rare Scottish Coleoptera, *Robert Hislop, Esq.*, 8301. Coleoptera in the New Forest, *G. R. Crotch, Esq.*, 8301. Life-Histories of Sawflies, 8301. List of Phryganidæ taken in 1862, *Percy C. Wormald, Esq.*, 8308.

Radiata.—Occurrence of Portuguese Men-of-War off the Isle of Wight, *Henry Rogers*, 8312.

Index, Preface, &c., i—xxiv.

Book received for Review. — 'Introduction to the Trochilidæ,' by John Gould, F.R.S. The note, last month, immediately following my acknowledgment of 'Birds and their Haunts,' had no reference whatever to that work.

Early in January, Price One Shilling and Sixpence,

THE INSECT HUNTERS' COMPANION, including an Essay on 'Pupa Digging.' By the Rev. Joseph Greene, M.A.

Edward Newman, 9, Devonshire Street, Bishopsgate.

PRINTED BY EDWARD NEWMAN, DEVONSHIRE STREET, BISHOPSGATE, N.E.

The Zoologist [microform] : a popular miscellany of natural history. -- Vol. 1, no. 1 (Jan. 1843)-v. 23, no. 291 (Dec. 1865) ; 2nd ser., v. 1, no. 292 (Jan. 1866)-v. 11, [no. 426] (Dec. 1876) ; 3rd ser., v. 1, no. 1 (Jan. 1877)-v. 20, no. 240 (Dec. 1896) ; 4th ser., v. 1, no. 1 (Jan. 1897)-v. 20, no. 240 (Dec. 1916). -- London : John Van Voorst, 1843-1916.
74 v. : ill.

Monthly.

LANDMARKS II
(Scientific Journals)

(Continued on next card)

READEX MICROPRINT EDITION

The Zoologist [microform]. 1843-1916. (Card 2)

Vols. for 1897-1916 have subtitle: a monthly journal of natural history.
Editors: 1843-June 1876, Edward Newman; 1877-1896, J.E. Harting; 1897-1914, W.L. Distant; 1915-1916, Frank Finn.
Absorbed by: British birds.
Issues for 4th ser., v. 1, no. 1-v. 20, no. 240 also called v. 1, no. 667-v. 20, no. 906.

LANDMARKS II
(Scientific Journals)

(Continued on next card)

READEX MICROPRINT EDITION

The Zoologist [microform]. 1843–1916. (Card 3)

Publisher varies.
References: Scudder, S. Cat. of scientific serials, 485.
Includes bibliographical references and indexes.
Micro-opaque. New York : Readex Microprint, 1984.
cards ; 23 x 15 cm. -- (Landmarks of science. 2,
Scientific journals)

LANDMARKS II
(Scientific Journals)

READEX MICROPRINT EDITION

Vol. XXI.
London : John Van Voorst, 1863.
xx, [8313]–8864 p.